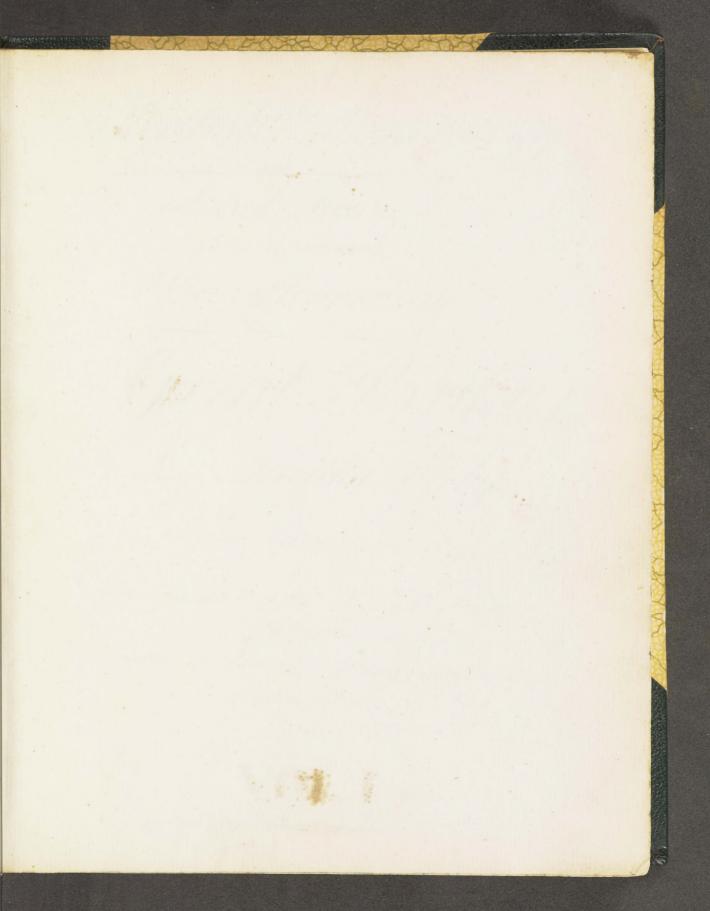


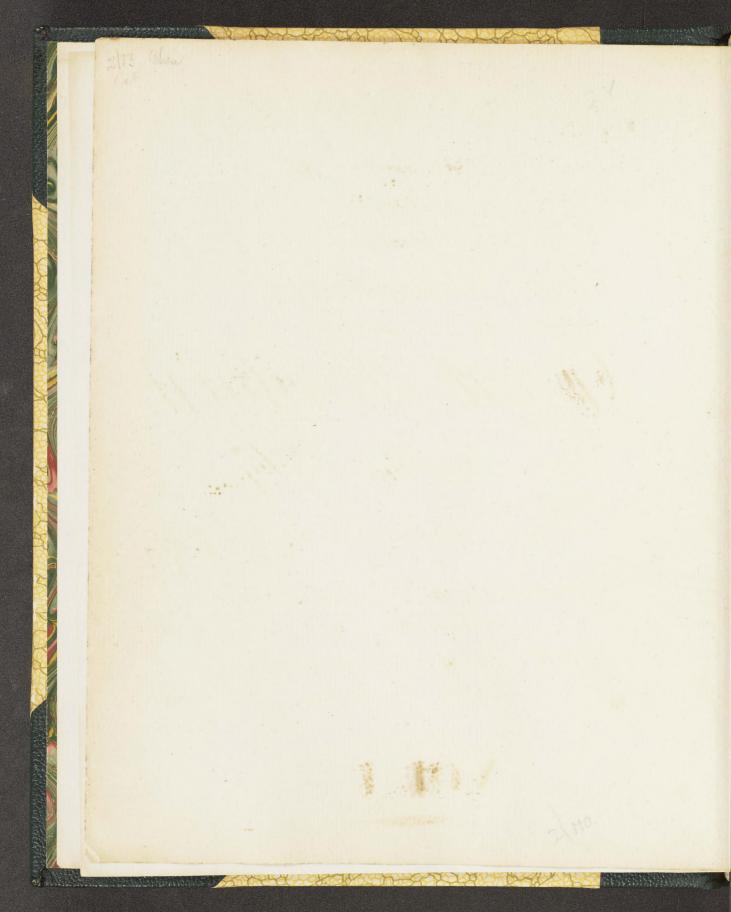




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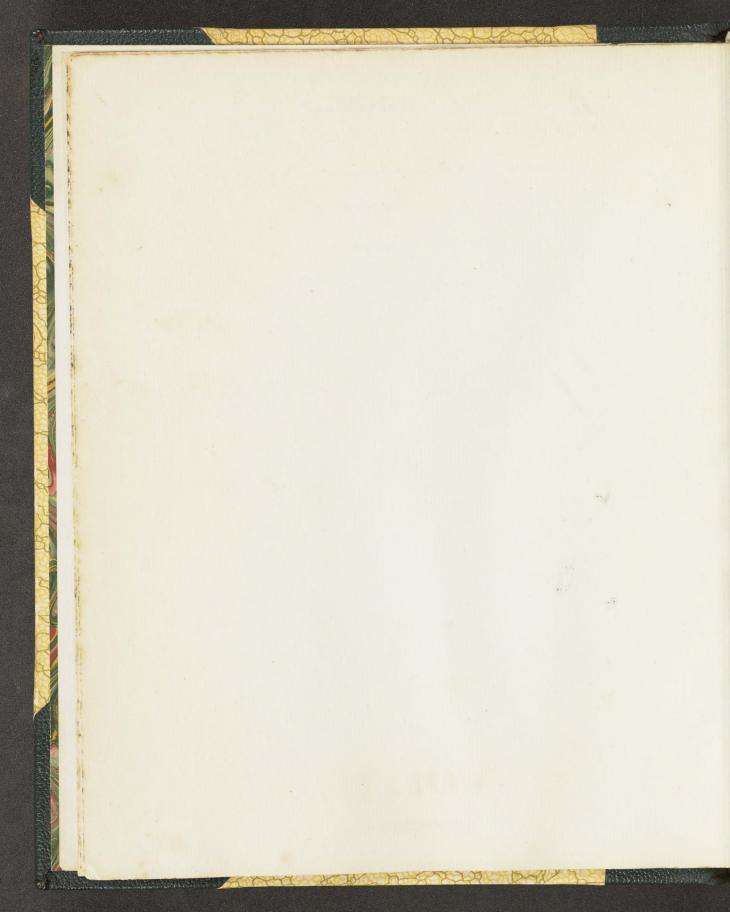
A. W. Edmonds Fest 1864 British Mineralogy coloured figures intended to checidate The Mineralogy Great Britain By Martha Proby. From Jumes Sowerby, S. L. S. Honorangmember of the Physical Society of Gittingen, Designer of English Betany, Author of English Fungi, &c.

VOL. I

Nov 1843

British Minish celement legiones The Monterny interestina other Prolie. 1.10/

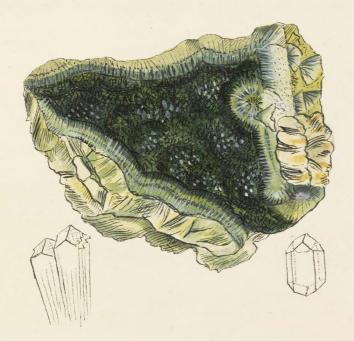
Robe Sticht, 1903.



1/1/1. and the south

Tab. 1.

This assertate of lopper has the appearance of tubic crystal, of Auseniate of From on the after or ends of the radio of Wood Topper. However a good crystallographer may finil out the yeal conformation; Sab. and . Show the nature of This mochfution, and it is only a series of radiating, or partly radiating crystals, which would together wedge. - chapel. as happens with calianous Spar, turninding with ortaiding To crowded at to show in general only as much as resem the the side of a cube placed obliquely with the edge whowards: see the left-hand figure. The other. outlines Thow how it accords with the modification of the preceding figures. There is a tendency to a concane formation of the faces which belongs to this actaillion, I often may be sun in luber of Arveniate of Soon, tab. .: it in Some measure and The clerch Now. The Asseniate of From is generally of a gellow- green. The Resonate of From Copper in this and tables 1932. Tests whon Quark in park crystall. Hed, but chifly in broken fragments much with Oxide of From.



Arseniate of Copper.

Tab. 2.

Plumbum cupreo-antimonatum

Sulphurated Copies - antimoniated Lead.

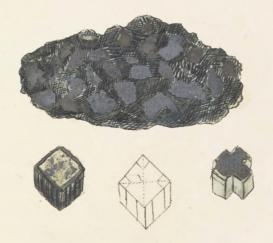
Gen. 15. Lead. Spec. 3. Suffhweet of Lead.

Syn. Friple Sulphuret of Lead, Antimony, and. Colfeer. Bournon & Hatchett in Phil. Trans. 1804. Part I.

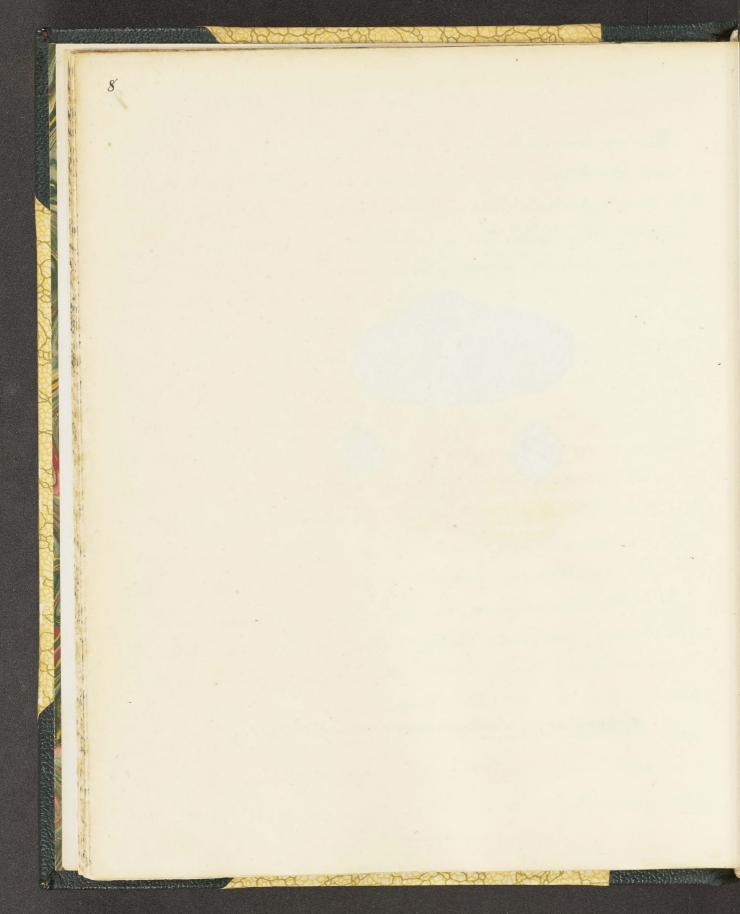
Ore of Antimony. Hashleigh, v. 1. pt. 19.

This comes from Thuch boys in the parish of Endelllow, in Cornwall, and has been always rare, and was supposed to be a Sufficient of Anhimony, untill M. Hatchelt analysed a substance wearly related to itbut somewhat highter-colound, and found in the Same mine - see pt. 5 which agrees with it in the nature of the crystallization, as is pointed out with

much ingenuity by the Count de Bournon in the Thit . Frans. They are found to be hiple sulphurch, and when most pure contain chiefly Lead, Antimony and Copper in the metallic State on union with Sulphus. Then the whole becomes a supreous antimomated Galena, and, as most related to Lead Ore or Galina, we mame it as above. The Imesent spennen is at it were passing into this trip. - let, as one of the common appearances of Seithfunct of Antimo - my is with it in the form of hairs and specula, and the crystale are composed of bundles of fibres, making a more or less complete modefication, and accumulating in whork or in crofses. So the right and left hand figures. The signs of the printine cube are districtly seen on the ends of the groups, and the reverse of the same figure; but it is diff. with to see the primitive fraction, as, although they have a loose appearance, they are so misorporated that they parture most like a compact grapy substance, conchordally and virigularly. We had the link to find one fractund face which may agree with the Counts vilear In this There is the libie sign of the primitive with the edges hevelled at an angle of 150° on the opper face, and of 120 on the prism, mearly as the lount de Bournon Observer.



Cupreous Antimoniated Sulphuret of Lead.





Tab. 3. Plumbum carbonatum cetaedrum: Octaedral Curbonate of Lend.

This spenimen came from Stoffeld man Lofsic North, Elquishire, it is currous for having an outaidral crystal near - by resembling, at first sight, the secondary one figured by Hair, pl. 67. fig. 46. There are the 4 faces of the Immittee octaidson as mentioned by Sain, fig. 45. M. See the trapexoidal faces. It has also four triangular faces agreeing with y of fig. 50 - Hany. This Specemen is an example of a hard thirty Took holding Galena, or common Lead one, sufficiently good Is tempt the miner; but the hardup of the rock is an obstacle not easily overcome without an amazing expense. There is perhaps an additional hope to the owner that he may not he aware of, which is, that Phorphate of Lead accompany the Galana; and where there are, the rock is fifile, and more easily anspille. The sometion, as to distance of ful and conveniences for smitting, is certainly to be considered.

. . .

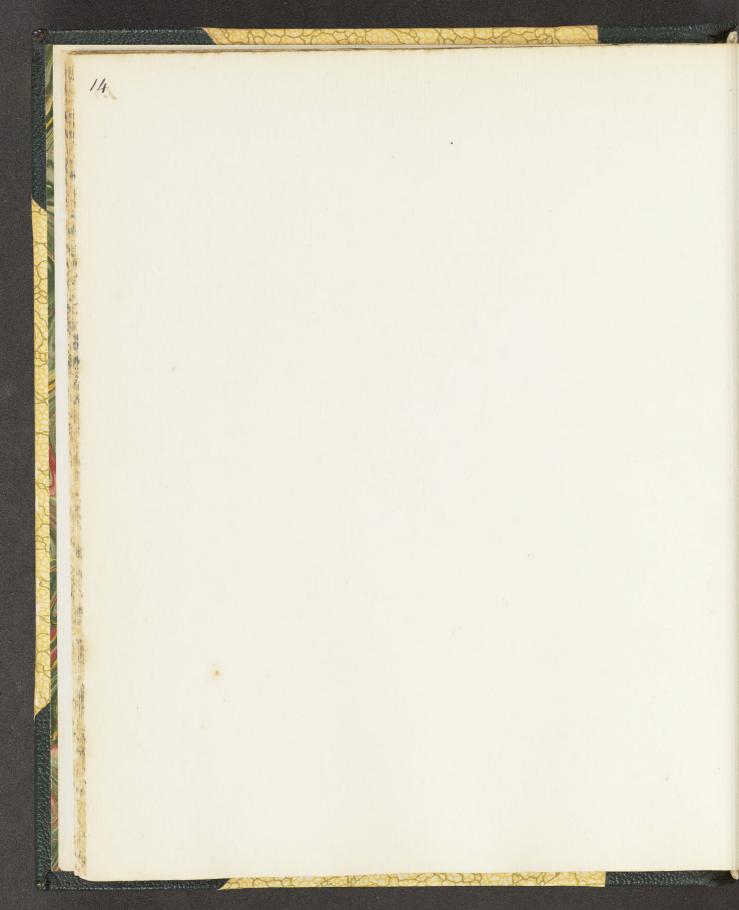






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Octaedral Carbonate of Lead.



Jab. 4.

This pretty specimen same from Monymush & to rather of an inversal solow and appearance, having additional bevillings and mineralisms; six two on each of the mone obtuse edges of the prism, forming four additional faces, and making in all ten faces to a prism and two small faces in the afex.

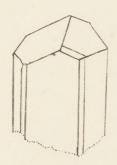
Thelespar differs in specific gravity from 2.272 to 2.7043.

Ander the blowpipe it melts with into a whitish glass without addition. It also varies in analysis, containing

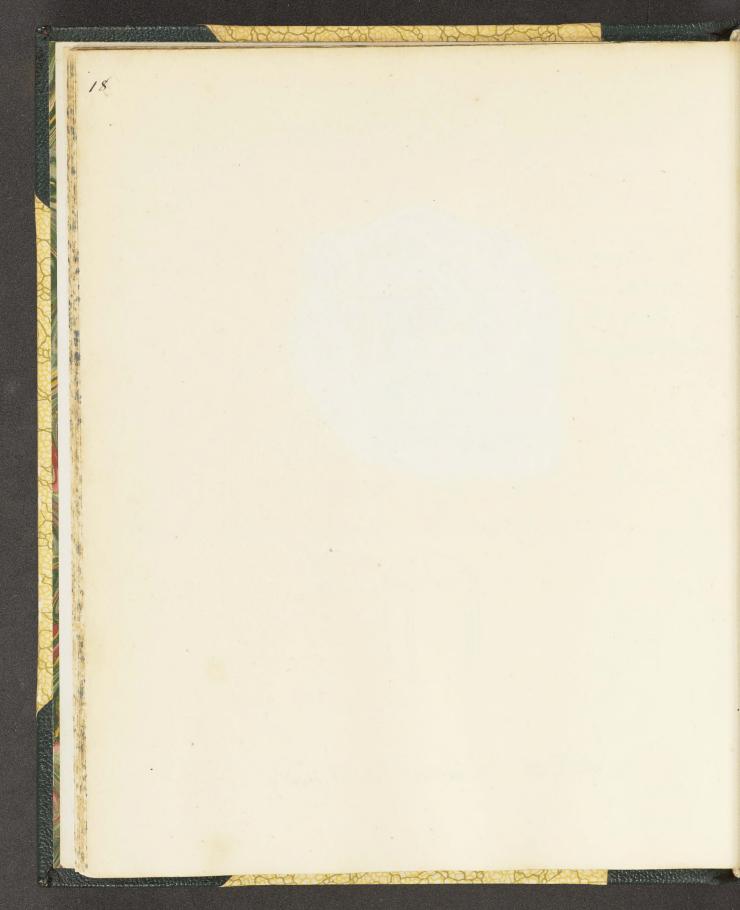
Silex from . . 43 to 70 Alumine . . . 14 - 37

Line, sometimes Onide of Iron, and also Potash; Bangter and Magnesia, according to Kino.





Crystallized Heldspan a Variety.



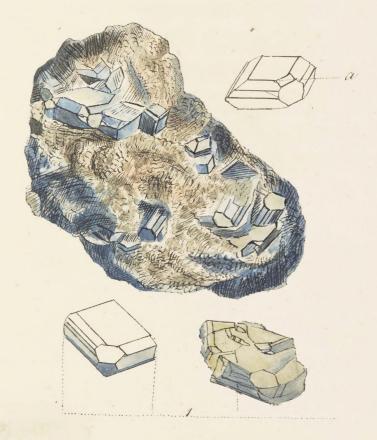
Tab. 5.

From the printy of these specimens, which were tent me by Mr. Muhard Phillips, resulted a most perfect analysis by M: Hatchett, who has determined the proportion of the substan. les in it and the targrep of the crystals has been the cause of lount de Bournon's determining the primitive crystal and modifications, which is so difficult; ashe obscures, from The imegutanty of their inenease. The fromtive, as he Temarks, is a rectangular tetracidral fruin, which has its terminal faces perpendicular to its axis. Thus it is a doch of Cube, and from observation on my specimen (see tab.2) Spind the integrant molule may be a tricital frism, four of which make a rube. We have here figured what appears to be one of the largest ingstate that have get heen seen. It is terminated at both ends with short whermes in the form of petales, and think sideways on The gangue; The Tolumn forming heraidral faces, Thirty on account of the deepness of the other faces, and the decrease towards the middle, mentioned at tab. . Thus the face dureasing on the cohumn is reduced to a small mangle: see right hand figure. On This orgstal we also observe another modification that has

not get been mentioned by Bournon, vis: The upper face on the corner of what he calls the primitive priom, forming from the terminal face probably at the same angle with with those in a hine with the prism: see figure. a.

Mr. Hatchell after a careful analysis, found it to contain.

It is of a grayer colour, and much more fusible than falena, as it metts before it is red hot; it leaves a cupicar our residuum, whereas the fibrous part - tab 2 - leaves seare any. Its histre is very great . This I points out the faces of the column which are very small. The right hand project is the natural crystal. and the left hand geometrical outline, to explain the faces above and below the column.



Cuprious Antimoniated Sulphuret of Lead.

Tab. 6.

Therrum Sulphuretum.

Sulphunet of Fron, or Fron Payritis.

Dio. 2. Smilative.

This speamen Shows the last of an Anomia surrounded by Paprites, and the place formerly occupied by the Shell remains nearly empty. It is extremely curious, that the Printer, in solution, should have formed the last and enclosed the whole, I by some agent afterwards the Shell should have been disolved. L' Allamont's finding lyspour enclosed in Pyrites would perhaps account for this if we had found gypour in the place when the shell had been or near it; for the sulphur in an accidations state might have combined with the home.

This came from near Shirst Prinfort, which place is surrous for its numerous fofiil productions.

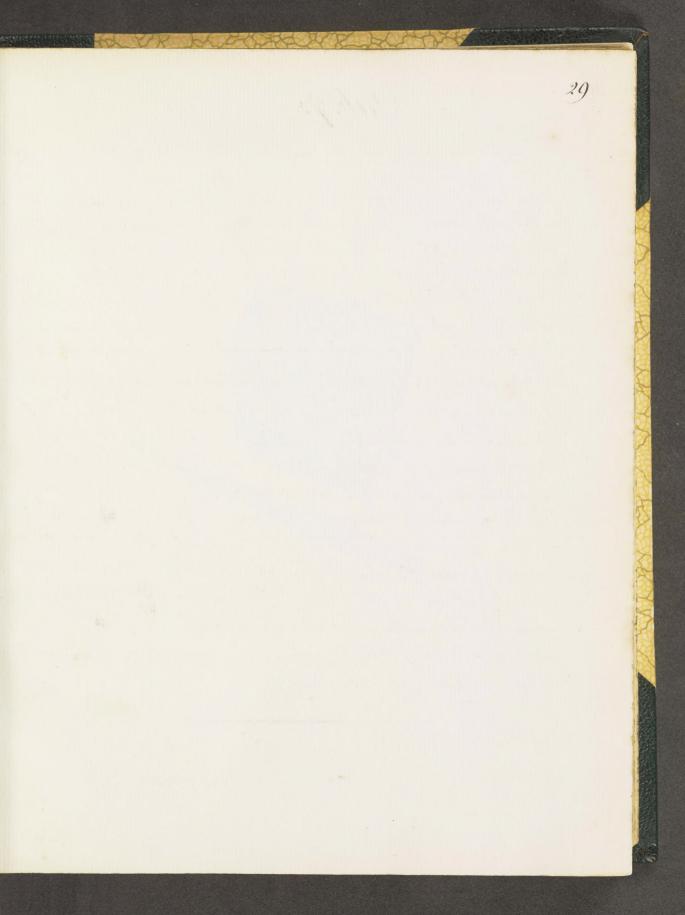




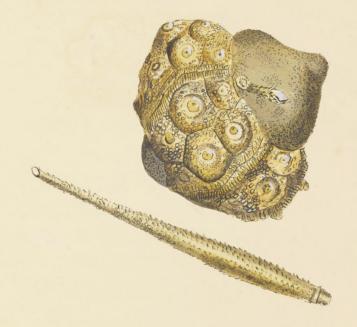
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Fron Pyrites containing the cast of an Anomia.





The apparent loss of the animals in these Echini is as yet unac. · lounted for, and an immense quantity must have been lost To our view; afthough on the examination or analysis of Earths, the animals have never been descovered. Whati in Some Baralt, &c. which was always supposed to belong to the regetable hingdom. This specimen was found in a chathe, rock at Saffron Walden. We have the spines from various' places. Its quat curiosity is, that the Shell part is extremely perfect as a larbonate of Lime, although filled up with Think; which has seasely disturbed it not with standing its having over flowed as it were at both ends. This is said to be a variety of the Behini ledans; to which we do not about. 8. hashleigh, Esgl. has figured another spe "cuis, Echinis cercinatus, under stimilar cerciinstances; which not being uncommon, server well to show that nature performs the same offices by similar means in various places; a hashligh observes, its particular structure will point out to the theorist that it is not the unmediate flech of fine, in the common acceptation of that term, but with the aid of other principles modefying the operation To as to give another Idea.



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Echiniform Carbonate of Lime, with Filint running, through it.

Jab. 8.

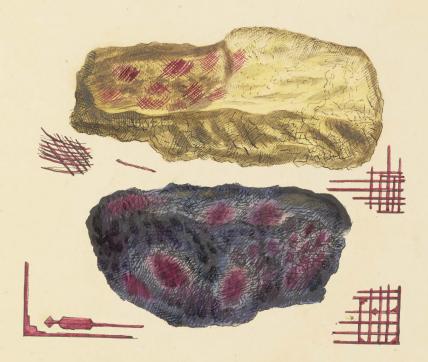
. Eujeuem oxygenizatum. Filamentose (xide of Copper.

Qiv. 2. Imitative.

. Vathere, ever various and instructive, often represents one thing with the appearance of another. Thus, a casual observer would expect that this lapper Ore mearly constitut of felaments of Searlet sith: however, on examination with the help of a lens we with certainty distinguish the contrary, I see how beau tifully Nature varies her operations, and under certain commistances accomplished The same end with different appearances: Thus, the molecular are forming threads more or less chiscoverable in the shape of elongated a tackrons or cubes. Whe supper figure is decomposing Altopar and Quarte with these filaments of Brily laffer Ore, some of which are in bent 4- sided threads croping each other. Others are viregular and confused, apparently having been disturbed: See the left hand where figure. In some parts they are disposed in Straight framents, crossing each other at right angles,

figure. The lower figure is chiefly thuty copper and Nature Copper, with a little Quart and copper Byrites. The fibres on this are larger, and show signs of clongated actaintons and certaingular prisms. They are heautifully pellurial, with the full hister of a huby. We may add that there is a regular gradulion from the powdery oxide, naturally opaque, through majors of confused fire laments so extremely fine as to hartane of the same of parity, to such as resemble fine wool.

This openmen came Reduth in Cormall.



Buby Copper fibrous.

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Tab.g. Calx carbonata, dura. Hard Carbonate of Lime.

Class 2. Earths.

Gen. 3. Calar.

Gen. 3. Calar.

Spec. 5: Parkonak of Lime?

Syn. A new species of hard Carbonake of Lime? Bownen,

Phil. Trans. 1803. 325.

* In arranging this variety, we should place it ofter all the

This specimen came from Sattand it is very curious. We understand that only a few specimens have been freeserved which were collected in the neighbourhood of Glasgow.

The Structure at first sight has nothing new in it; but it might be taken for larbonate of Line, which it really is although the fraction much resembles that of Quarte, but is somewhat rougher! We admire the bount de Bournon's indifatigable patience in

measuring and pointing out the modifications of these out table, which we did not attempt; we have only continued to point out a lew faces that were passed over, as they may possibly he interesting; for which reason we have made shether of them. The bases sam exact he as the bount has determined them. The prime had are 3 small ones on the summit, as represented fig 2. — This . Shows a minute triangular one, and one of these above mentioned. The matrix is ferriferous l'arbonate of Line with Pyrites and small double-pointed orystals of Quarte.

This variety.



· Hard Calcareous Spar.

Tab. 10.

Calx carbonata, echiniformis.

Echinus - formed Carbonate of Lime.

Chafs 2. Earth's. Order 1. Homogeneous. Gen. 3. Lime. Spec. 5. Carbonate of Lime! Div. 2. Smitative.

That animals we indebted to minerals is very evident although vegetables may be the instruments by which their metiment is prepared. We may also say that quat part of the mineral world is much indebted to the animal for its present appearance; for, sender certain corrumstances nature allows the animal construction to remain long after the animal itself. In this instance, it might have been a doubt whether a construction so complete as this Echimes and its spines could be an infettation of larbonate of Lime in place of the lase, or rather bone, or the remains of the larbonate of Lime which carted while the animal possepred it. Its fractions is sufficient to determine it to be larbonate of Lerine which is sufficient to determine it to be larbonate of Lerine which is sufficient to determine it to be larbonate of Lerine without any other trial; and upon examination it is found to be marly pure.

M: Hatchett, in his valuable amount of the shells & bones of animals, proces the case of a recent rehimes to be bone; as it wontains its due proportion of Phosphate of Lime. This is Therefore the more curious, as there is no Shorporus remain Ing to destroy the crystaliered character; the corbonic acid predominating effectually in that particular. To know The animals that are three formed as it were petrified may not sam at all the province of the mineralogist, nor is it perhaps strutte, neupary; get it is convenient to have such information, as it may be sometimes of great importance. and it must appear remarkable to all that atthough the petrified remains of other animals are very similarly of Those of our own shines are never found. The shells are of a delicate structure. The animal parts, exclusive of the la-- bonate of Lime, much hafs away, while larbonate of hime or Ahinh ou felling of the vacancies.

This species of Echinist is ather a newone, of as varety of Echinics lidaris of Bortish Misallany, came from Queensford found in a challey marle;

* The British Museum has some the above was written been presented with a fine Specesiese of a Herman Shepton sinbelled in Line Some F.F.



Echinisonn Carbonate of Lime.

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Cab. 12.

Aurum nativum. Native Gold.

Gafs 3. Metals. Order 1. Homogeneous. Gen. 2. Gold. Spec. 1. Native.

Gan. Chard. Mathable; sonorous, redchish gellow, Spee. Grav. Spec. Char. Uncombined.

Syn. Native Gold . Him. 2.93. Phil. Frans. 1796. 1.45. Amum Nationin. Waller, t. 2. p. 355. Geckegen gold. Emmert., L. 2. p. 111. Or natif. Hairy 3. 374. Amoun nationi. Line Syst. ed. 13.

Gold is well known to be found in dere, several parts of the E. Inchis, & Thungary, often orgotallised in octavilrons and Their modifications. It had been found in Scotland in Cornwall and Feeland which place has long froband the freein have been found muighing from 3: 16 22; but The mines have not get been desivound. The Wipper Sperimen was bought of an Fishman in London; I this was one of his largest spenimens. It is formed of flathish prices, or farminated, as if it had been yolled up I touten about very very alarly. It was cut in two at the

must, which helped to obscover this foliable appearance, and also, that it contained grains of whitish quarte and and ochraceous gritty clay (see the cut figure). A print of Soft histo schiches, or state, with a gray appearance on the in-Tedder Than where it is broken as out. The third free on the right hand was a piece of a ridder; that on the left hand was the whitest of any seen in Ireland. The Three fower preies are different colound spaining from Lammon the Stream, mean Halmouth, Comwall. Gold is much more scarce in Cornwall than in Inland. The Irish specimen spoken of in thit. Frams. was found to contain Of Fine Gold 218 Fine Sakurd ... 17 Alloy Copperd Iron . 038

Ther specimens deffer a little; and thus, if we may shally by the outer aspect, the reddest probably, contains most copper & won, a the whitest most silver More silver sums to give a greenish things to gold. The little lowest left-hand figure has that things.



Gold, Trish and Cornish.

Jab. 13.

Calx varkonata fætida. Ocraceous Hinkstein.

Dio. 2. Imitative

The formation of this substance, however singular, seems hitherto to have escaped notice. It might perhaps at forish he taken for a Coralline; but we have by comparison of specimens somewind ourselves that it is rather an aftern · blage of funnel - Shaped Stalastites formed in a fluid median, the swifeee of which has become encousted at Tegular intervals, especially around the Stalactite. Although there is a variety of Specimens, not the structure councides very accurately in many of them. Some mided. are more puzzlaing to amount for than the frudent. I not union monly happens that Statutty one hollow, (see tab. 57.) and others undertated, They also Widently form a deposit, or case after case, on the

outside in a concentric manner. This does not seem to have been formed so; the peculiar state of the substance of which it appears to have been composed, having only a certain quantity of morthow enough to form a hind of paste, which may have allowed in to have dropped into one make at more or less regular periods, freduing This remarkable appearance. Now it happen that the Shot which produces a variety of these produces also the Botryoidal Shinkstein in queak abundame & varety. See tab. 80 . They are generally found fulled with a chusty ormacious marle, such as would readily allow Scattered drops of water to collect it on their surfaces. This came from near Sunderfand.



Ochraceous Stinkslein.

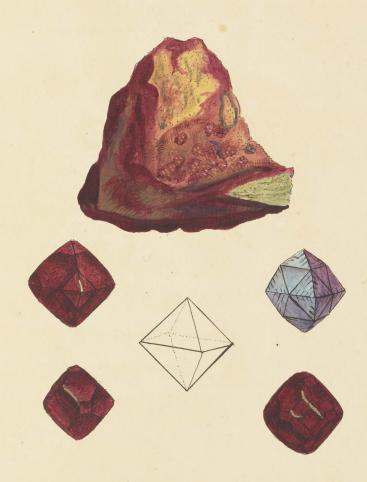
Tab. 14. Cuprum oxygenizatum!

brystaffixed . Red Oside of Copper.

Div. 1. Crystallized.

This is from Conwall and a nonins spermen, it has a remarkable modification - the wobo-ortaidron of Hany, with the addition of a obtuse 4- sided pyramid on each outin face, formed as it were of somewhat distinct plates. It In on crystal this programed is formed into a crops, the glates of which it is composed being notched or munifitete in the centre of their edges, and complete at the corners: see the right hand upper figure. With These on crystals of similar forms, of very June lopper, lomposed of oblong partiles with a reticutated appearance as if they were some of the others, of an anterior forma-- trow having been deprived of their caygen. These Crystats are very extraordinary, as they comfrehend the

Octaechow with fruncated edges: They have also truncated and bevelled solid angles, making a very compound onystat: see the left hand Jigime. The intermediate Caricties are the dodecaidron, Amneated at the solid angles. The particles Show some signs of being Thouad - like confused octaiding Somewhat resembling those in plato, tab & . They are ex-Hernally between a lopper colour L'ed , scaruly metallic In the trustre, until cut, I then perfectly so It is as the Count Bournon observes, useful in many mistames to use a magnifier to examine trystals; I we should one many interesting beauties northout it. These indeed may be fruitly well seen by the eye alone, but it is ad-- mirable to observe how meatly there are formed by Such help as the magnifying glass. We do not know of any other Specimen of this hind.



Ruby Copper:

Tab. 15.

Argilla marga!

Augillaceous Marke.

Class 2. Eanths. Order 2. Compound. Gen. 1. Argister. Spec. 1. Marle?

Div. 1. Imstative.

Syn. Fophus Thorbinatus. Linn, Syst. Nat. ed. 13. v. 3.

We so frequently find the figure of locallines, or other organised substances, that we are often presented to account for them; some however are reachly understood to be infethations taking place of them, and that before me has hetherto been considered by many in this fight. The snighter regularity of the specimen here figured has given rise to many conjutures. Sowerley thinks with Linn that it is a Stataitite Sormed under certain continuationers among others

operations of mature, which may be continued to a great entent. Thus M. Martyn observes that a very large Space on Terbyshire is of this formation. It is finely unchitated: and in other respects the cones un into each other, something the a Child's from gig - while will defenate noto a number of cones, more or les perfect, if placed by the fire. From the present specimen Sow! Separated Some cones, by atternately wetting and dry ming it. We do not honow how minutely they may be dwided. The fracture is the other compact calcareous marles, that are not governed by the somical forma. - tim . This specimen came from Boulby in Morhshine alum - worths, I was remarked for hing the a horses hoof, having tettled upon a form Ammonio. They are mostly of an argellaceous marle: but fow? has one from Cumberland, from Barton Well, which sums to be more of an Iron. One than any of the others . In. most of the English specimens the cones are rather confu tedly walisad. In foreign ones, groups of cones joined Together by their edges one afth to spot deparate. In this there are so much popular that it, might be residue an alumone.

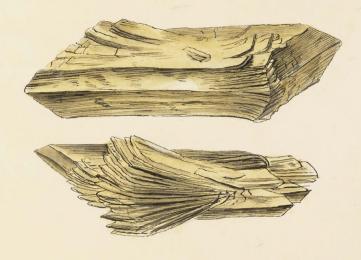


Argillaccous Munle.

Tab. 16.

This is a variety of Salphate of Line from Bulfordshire, I howing a tendiny of the famina to separate and hend which they will generally do in the bongitudenal desertion. Thus a plate of fry sum will be found to break left readily in this derection, always hending before it breaks, I then generally ruggedly, In the other dried from it is either glafey or foliaicous. When these mystallisations spread time the lower figures they are commonly called Lions paws. bry stallised selenites are the Moon Stones of Gesner and Agriciola. Selenites are the Moon Stones of Gesner and Agriciola.

67

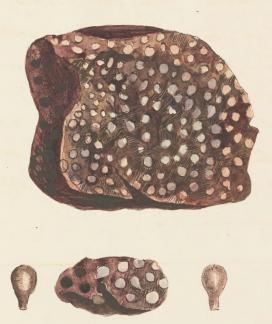


Crystallized Sulphate of Lime or Cypsum a variety.

The IJ.

Jo Jab. 17.
Fruim wyillaceum.
Argillaceous Oxide of Iron.

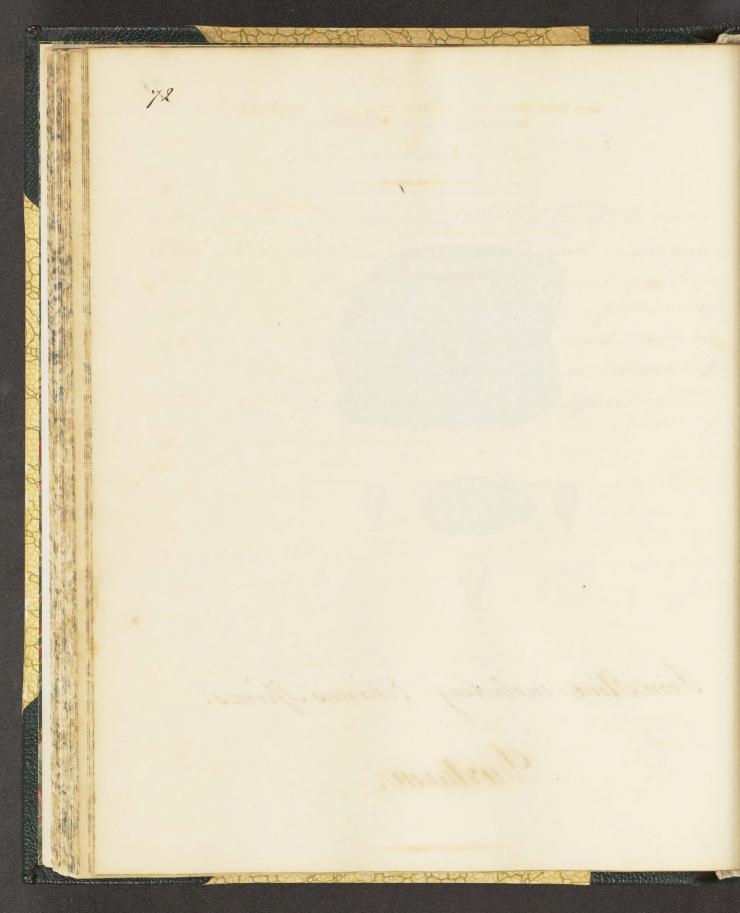
This specimen came from the banks of the river Tees, which place seems to abound with many curious solving to he a fragment of a large flat piece of a confirmed from stone, a good one of the hind. It is however rendered additionally on nows, as it includes tarbonate of Lime, or Calcareous Spar, in the form of Sichinas spines, but different from any before mentioned.



Fron Stone including Echinus Spines.

Durham,

2-108



9 lob. 18. it a horner interiment hearyound. · bundaning de promo yearunder Part. 1. Honingonemak. clops, Heliels. Spece A. Julyland of Some Some so trong per operanen en militarte fractil by her de lasting regulations of the soft product coal, from descript to fines to revenue a figure tion when the las faller. April Shuming the Land house of oughput mine hereal of al sugaring moismone

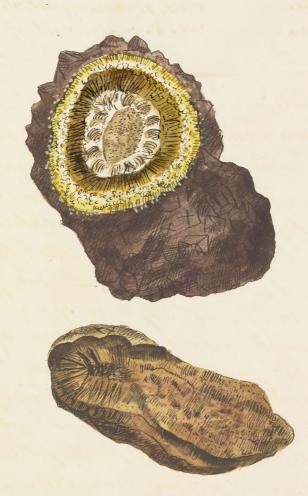
Tab. 18.

The Ferrum sulphureum, decomponens.

Sulphuret of Fron, decomposing.

Class Metals. Gen. J. Fron . Ord. 1. Homogeneous. Spec. 4. Sulphuret of Fron.

Sulphuret of Fron, or Fron Syrites, under vertein chan--ges of atmosphere, forms sulpate of Iron, or Green Vitriol, and often falls to pieces with efflorescence; to prevent which, and to preserve curious specimens, They must be kept immersed in water. The up. per specimen was sufficiently protected by the dark partly crystablized, outward, outward coat, from decompo. Sing in the common atmosphere of a room, in a damp room neighbourhood; But soon after it was broken, The more porous parts put forth curls of light. ish-green vitriol, and at the edges chiefly, sutphur: It still slowly decomposes and has continued to do So for some months; in time perhaps it may fall to pieces, or remain a porous iron other, like the lower figure. These specimens were found among a miraceous limestone in a quarry near Godstone, in Juriey, where they roll down from the top in great abundance.



Sulphuret of Iron, or Iron Pyrites in a decomposing state. Godstone.

: Jah. 10. HetruM angilmound Sujlacioni Perite of Sen. in to marky the same without popul in the land plate; test it has proper and grove about it, which one converted with it ands a lefter but like from. It must may pour much faither all to the cell flowers a list to the tree. I the first expire is currently per and series in sin was when it her tunnelle of some probles, particularing of the nature of the called Eggpliner which, got the most admined

Tab. 19. Ferrum angillaceum. Argillaceous Oxide of Fron.

This is nearly the same as that figured in the last plate; but it has pebbles and gravel about it, which are comented with it into a hollow box the form. It was discovered by an endeavour to break the stone from off the top of the supper figure, and thus formed a hid to the box. The lower figure is curiously concentrated with light othere and a darker umber, and serves to give an idea of the formation of some pebbles, particularly of the nature of those called Egyptian pubbles, (not the most admired soit,) of which more is said.



Trong Geods.

Tab. 20. Ferrum nationm.* Meteoric Fron.

Closs 3. Melals. Order 1. Homogeneous. Gen. 7. Fron. Spec. 1. Native Fron.

Spec. Char. Malleable, and nearly uncombined.

Syn. Firmin retractorium, granulis netentibus, matrice viresensti immatis, (Fierrum virens Linn.) injus fragmenta, ab unius ad vigenti usque librarum pondus, cotice nigro sioriaceo circumdata, ad plann, prope Tabor, iviculi Bechinensis Bohemice passim reprimentur. Lithoph. Born. pars 1.125.

Stones said to have fallen from the Clouds. E. King's Remarks on, &c. 21.

Certain Stony and Metalline Substances which have fall. on from the Almosphere. Phil. Trans. 1802. part 1.174.183.

* This is arranged as a native iron, which is its great sharactoristic inquedient. It must some near the Iron of Isteria, Bohemia, &c. and he followed by the subscides.

To introduce a subject, however curious, as having fallen the a meter from the Shies, might seem absord in a work on British Mineralogy. But whatever may be the extent of this term mineralogy, it is fruitly universally under
Thood to include a knowledge of stones and metals; among the latter of which we place this production, and feel much gratified in adding so great a rarety to the British catalogue.

But we ought in charity, to wish such may still continue to be rave, as otherwise the consequences might be dreadful. It is particularly to be noted That The dame substances are only found under similar circumstances. Many of these stones have failer abroad in different places, but only two are known to have fallen in Great Britain; The first in york. Shire, part of which is here figured; and the other in Scotland. They have been found to contain 1. Silex. 2. Iron in a malleable state. 3. Magnesia. 4. Martial Syrites. 5. Nichel. The Allea is litish gray, in some parts rather vitreous, with rectange. - lar yellowith fragments: - see the left hand figure. It is in very num. -rous but minute particles, which require the aid of a magnifier to be distinguished . The Iron is grey, much dispersed in particles of dif. Jenent sizes, mostly very small, often in rows, and sometimes in veins .-The magnesia seems combined with the silica, and the Nichel chifly with the Iron . - Thy Byrites are chiefly dispersed in particles among the whole, some enclosing malleable tron, and some looking, when magin-: fiel, like partieles of quicksilver; others are more distinct, and tarmshed like common pyrites. They emit a blue blaze if projected on red hot Charcoal, and are easily fusible, becoming magnetic. The conting beens to be fused together, is very their, and Somewhat less magnetic than the ust; in some parts entering and forming viens within the stone. The whole is in testure the a compact sandstone, and may be membed into little pieces by the nail. The fracture is irregularly Souchoidal, Sandy or earthy. There are dispersed through the whole Several Sphorules of a faminated teature, which were first observed by M. Howard. The upper figure is a fragment showing the coat and the inden. -takions common to most of these stones also the little Estimated brachs sometimes felled up with the whiter parts of the stone.

The right hand middle figure shows the other side of the Same frage ment, with a vein of Fron , somewhat sailuted, sime being broken; also little hmots of iron, of a metallic histre, which are irregularly scattered among the more minute particles of the same, with pyrity in the map of the whitish earthy substance, composed of siles and magnesia. The left hand figure shows the vibreous Intolance found in some parts of the stone, highly magnified. lount Bournon has found the same in the Sienna one. It is to be soratched with the nail, close we should have compared it with the peridot of Bournon, or chrysolite of Worner, which is found hi the Siberian iron. It is nemarkable, that besides this substance Sowerby has some enjotallihed funites adhering to a friese of Siber. Tin iron. The fower night hand fragment is magnified. It shows the granular formation of the stone, with somewhat tamished fignites, and the particles of Tron in winder nows. The two bottom left hand figures represent the earthy spherales. (These agree partly with those found by the bount Bournon in the Bohiman Stone)

The following amount of the Yorkshire Stone was communica:

ted by Major Topham: (Sowerly has the Stone in his pop.

chin "What projected for would throw a stone of 56 pounds weight

from any volcano whom earth to the Shot near my house where it fell?

from any volcano whom earth to the Shot near my house where it fell?

Whith it might not some from some valcano in the Moon? anidea

Whith French Scavans much incline: or whether a flosh of

to which French Scavans much incline: or whether a flosh of

aformerate, to form at once, and, as it were, to honead to gether that

aformerate, to form at once, and, as it were, to honead to gether that

thereogeneous maps of sulphweeous and minimal matter of which

beterogeneous maps of sulphweeous and minimal matter of which

this stone, and all others that we supposed to have so fallen

this stone, and all others that we supposed to have so fallen

this stone, and all athors that we supposed to have so fallen

this stone, and all about two fea fields from my house. The weather was

ber, 1795 that this stone fell about two fea fields from my house. The weather was

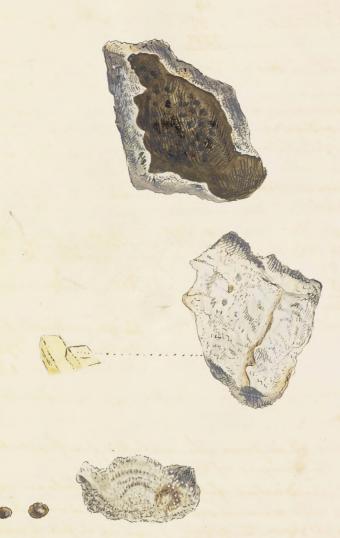
over 1795 that this soulling to rain; and though there was some thunder and

mith 2 at times milining to rain; and though there was some thunder and

86 hightning at a distance, it was not till the falling of the stone that the explos - Iwin took place, which alarmed the swirounding country. When the stone Jell a Shephord of mine was about 150 you from the shot; G. Snoden, was hapsing within 60 yd! & John Shipley was so near the shot when it fell, that he was shown forully with the mind &c. raises by the stone dashing . Into the earth which it did to the depth of 12 inches, & y afterwards into the chalk rock, making in all 19 in. from the surface. While the stone was paping through the air - which it did in a N. E. dine " from the Jea - mim -- bus of Persons saw a body paping through the clouds, but with not a scertain what; many of the provincial newspapers published accounts. The stime so totally deferent to the nat! I tones of the country: in its fall it excavated a place before mentioned. I omething more than a yard tor -tome: diam " & so strongly it fined itself into the chalk rock that it sost some trouble to remove it. To perpetuate the spot where the stone fell Thave enerted a filler, with a plantation round it I this insort, Dec ? 13th 1795, fell from the Atmosphere An extraordinary stone! In Breadth 28 inches, In Length 30 Inches, whose weight was 56 Pounds, This tohumn In memory of it was exected by Edward Topham Compand to the one which fell in Scotland it appears similar, though the prostacions partieles perhaps somewhat lep conspicuous. This Stone was Seem to fall into a small drain of Water at Popil Quarry by 2 men 2 boys La dog (The dog ran home as if frightines, the noise was heard by many people at different places, within 20 miles, and 90 feet under ground in the Quarry) April 5th 1804. Among these was the oversuraf the quarry, who was talking to a man in a true at the time. a moise was heard, for about 2 minutes, beginning in the W. & pussing by the I round 1. H. E., with as much noise at first as if 3 or 4 cannon had been fired near the

bridge, which conducts the canal of Clybe & Tooth over the river Helvin, a mile L'/2 washward of the guarry; afterwards a violent rushing whitzing noise was heard. Sir J. Hanks first observed the Similarity of these substances to one another when he went to see the Josh one cahibited in Occadilly, and compared it with a fragment he had got from Benares; he had a very her fut one from I digle; it was meany black all over. The Scottithone seems a little moty in the outer coal. The Home which fell Dec 1/8th 1803, in Bavaria, on a cottage, it happened on the very day the yorks one fell; it is said the proportion are cubical. Thus Ring "Tradition has handed down to us the fall of stones in antient times. The learned Gravious leads in to conclude the image of Itanew was a stone which fell from Heaven. Herodiamis days the Phoenicians had no tatue of the Sun luch a great Stow which they reported to have fullen from Hea? Insturch also mentions them Ling & c. Their form angular. We now give the analysis from the ingenions awant by " . Howard, Esg! in Phil. Frans. 1802, part i. page 168 & following If the Stone which fell in Portugal, by the Boyal French Academician, Supplus - - - - 82 Iron ---- 36 Vir fable earth - - 55 2 Stone of Envishein, by Mons. Barthold, gave in 100 gr. Sulphur ---- 2 Iron -----20 Magnessa ---- 14 Alumina - - - - - - - - 17 Inne-----Silica ----- -- 42 How from Banares, the outside coating of while was found by M. Howard to contain from and mikel. The pyritaceous part in grains contained Sulphur - - - - 2 Tron - - - - - - 10'2 Nichel - - --- 1 Sarthy matter - - - 2

The globular particles in 100 gr. contained, Silica - - - - 50 Magnesia - - - 15 Oxide of Fron ---- 34 Oxede of Nichel --- 22 1012 The earthy cement in 100 gr. contained, Silica ---- 48 48' Magnessa --- 18 Oxide of Fron - - - 34 Oxide of Nichel - -- 22 150 gr. of the Seama Stone. Sarthy part Silica ----- 70 In the metallie part, Magnesia ---- 34 Fron ---- 6 Nihel ---- 2 Oxede of Fron --- 52 Oxide of nichel -- 3 150 grains of earthy part of the forths stone, 14 gr. malleable part. Oxide of iron 17: Selica ---- 75 Magnesia -- 37 Oxide of Fron -- 48 Oxide of nichel 2 * When there is an over plus, it is from the metallic ports absorbing the ca. - your from the aids in the property of analy sation. The exact weight of the stone which fell, by Merlins belone was 3 otone 13 ths; when taken up it was warm I smoked. a man daw it coming down at the distance of about 10 you from the ground; and as it fell a number of explosions were heard loud as a protol. at Brithington, Lat different villages, Sounds were heard in the air The following people withnessed the writing M: A. Wilson fell within 200 3 or of him. a man servent of Mr. Mm Parke, who his near Cap " Topham. Charles Onwhin, son of Rev? M. Prestin - many hand lills were quien about at the time attested by the most nespectable men of the place who were eye withefur of it - vide Sowerby's British Mineralogy: The whole accounts taken up too much soon for this copy of the work



Fragments of the Stone which fell from the Atmosphere in Yorkshire

Tinb. 22. 94 Quarteun interneum : Tak decompound Butter be legregale. Spec. (bur. My The high of The second of Some dome hand as flint, dome me wholly landereale of

92 Tab. 22. Quartzum calcareum: Var. decomponens. Decomposing calcareous Budding - stone. Class 2. Earths Order 3. Aggregate. Gen. 1. Quartium. Spec. Calcareum. Gen. Char. Quarts aggregated by the help of some cement. Spec. Char. By The help of carbonate of time. It often happens that siliceous aggregates decompose, especi. -ally when their coment is calcareous; which is the case with the fregent specimen. It is porhaps now fint spoken of, and quies us reason to suppose that the iron or colouring mat to is disengaged from the calcarious coment by somed agent capable of Junetrating the simost receises of the stone. This cement filled the cavities of the maps, leaving them hollow, or with the porous remains of the pebbles only filling a part of the old cavity. Some think the stones are only forming not decom? but the cavities appear to have been filled by a Whole stone. Some of the stones are whole I may be scratched with the nail. Some hand as flint. Some are wholly Carbanate of Ime. Some siles, others partly iron. a specimen of the 2- was found in Mich mond park at the depth of 865. This is a price of roch chiefly quark and carbonate of hime inclining to be Somewhat spongy and reddish with oxide of From : Some of the cavities are empty, others the numarior of publics in them. Some nearly whole. The lower. Sigure Tooks like a common hebble the whowing part of which has suffered oxidation so as to become a loose ferruginous othere. Some of the best mill stones are of this nature on a larger scale; the Smarth fing teff very porons; I there on preferred for granding corn.





Decomposing Pudding Stone; Warwickshire.

100.23.

Sab. 23. - 96 Therrum sulphureum. Supplient of Iron . Iron Byrites. Class 3. Metals. Order 1. Homogeneous. Gen. J. Sron. Spec . 4. Susphweet of. Div. 2. Imitative. Syn. Suffitures of Iron of particular Shapes. Bub. 204. Sulphur and Iron in combination are very common, and the forms of such companies are extremely various, both in regular crystallisation and in the rouder states. The upper figure resembles ouch as have been in chalk with an orbraceous outside. Eesembles the fruit of the Ofatamis Orientalis: The Swefare, is constallined, in quadrangular pyramids, or half relicited octaedrons, with or without miniations. This proves it to be a natural form to itself I not the fruit of the plata - mus. The forms of the crystallihation are magnified beneath, to Show how curronsly they commune, sometimes giving a floriform ap. hearance. The next was found among the marky rocks at Thathy Island , I seems to have been the treache, chropping at in. tervals, I giving this singular formation of an inverted cone. The nuch figure, redombling a Mushroom buttons, dams formed in a sim. ilar way; The crystallization & metallic appearance help to undereine. However, this is not always the case; I even this might from the rugosity, Take the shaggings of a Mushroom or cup of an acom, midead those who do not pay regard to the engetallisation of natural to Printer. The orache resembling stripes in the left hand figure like a Mushroom help to favor the deception. certainly Mushrooms grow plentifully on Shoppy Tole; This may have given rise to the idea of their heing petrified, though any lep fugacious Jungus might have stood a better chance. This sort of Pyritis is very

tommon in argillaceous mark all over the hungdom

and h varies infinately.



Sulphuret of Fron, or Fron Syrites in the form of Mushrooms &c.

Jub. 24.

Jab. 24.

The specimen here represented would, very naturally, be taken forone of quarte, which it much resembles; and perhaps it might be passed over by casual observation as such. It came from the lead hills near Glasgow and is very valuable. This figured of the natural sine, and has a part of a large hoxaidraf column very distinct, with many 18 sided crystals, either like The sortide outline in the middle at the right hand, or like the lower figure at the right hand, with the column interrupted as it were in its formation, giving them the appearance of the buttrepes often used in Gothic architecture, and adding many faces to the sides of the crystal, as well as giving additional angles to the faces of the pyramid They vary much; one is nearly time the left hand bottom figure with 13 faces, having a pyramid at one end only?











Dodecaëdral crystallized Carbonate of Lead with Columns

Silex Quantzum, van.

Quarta, of Agate

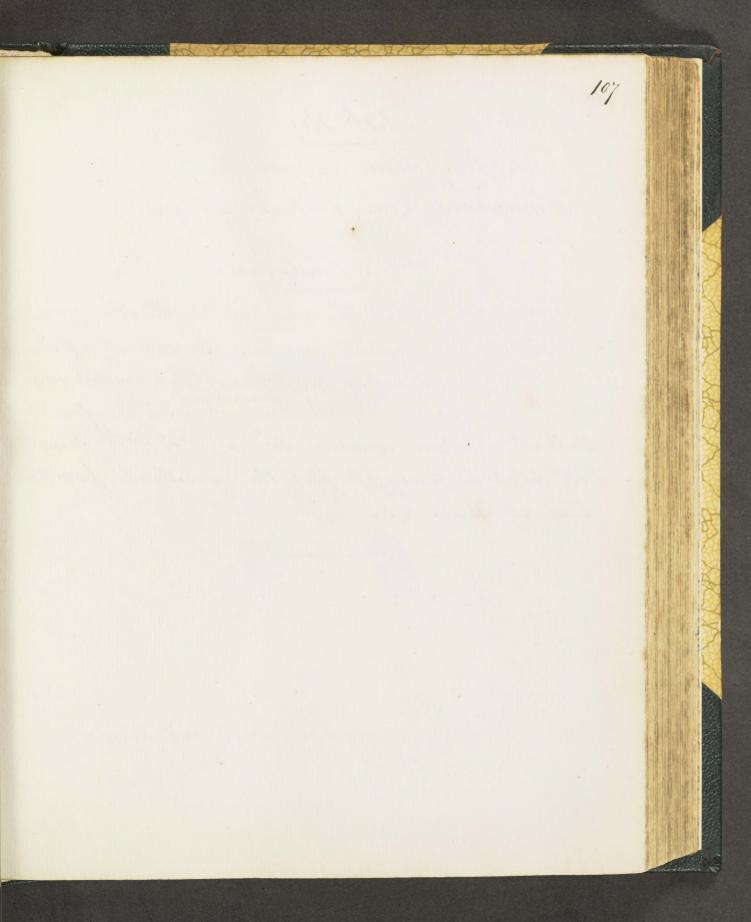
Haf 2. Earths Ord. 1. Homogeneous. -Gen. 4. Silex . Spec. 1 Quartzum! <u>Div. 2. Initative</u>.

The river Tay in Verthshire, as well as other parts of Scotland, affords many heartiful hebbles. The Upper one has been cut for ornament. The lower specimen came from the Jay. These pebbles appear to be formed in The Toches in Short stalactites forming in coats, which being more or less coloured by Oxide of Iron, form Thipes or circles, &c.; The outside rather knobby. This The Papidanies have taken advantage of, as is seen in These pebbles, and it assists in the disposition of the colours. Much seems to depend upon Quarto, Alumine and Iron to increase the heauties of this stone, forming in A Jasper, Agate, Cornelian, &c., so arranged in one stone as to give it variety and beauty. The ned circles are often speeks of ned in transparent Quarto? The parts with greenish spechs, which are magnified at the botton, are more porous than the rest, apparently filled with theorite.





Agate - Scotch Pebble.



Jab. 25.

Cuprum carbonatum?

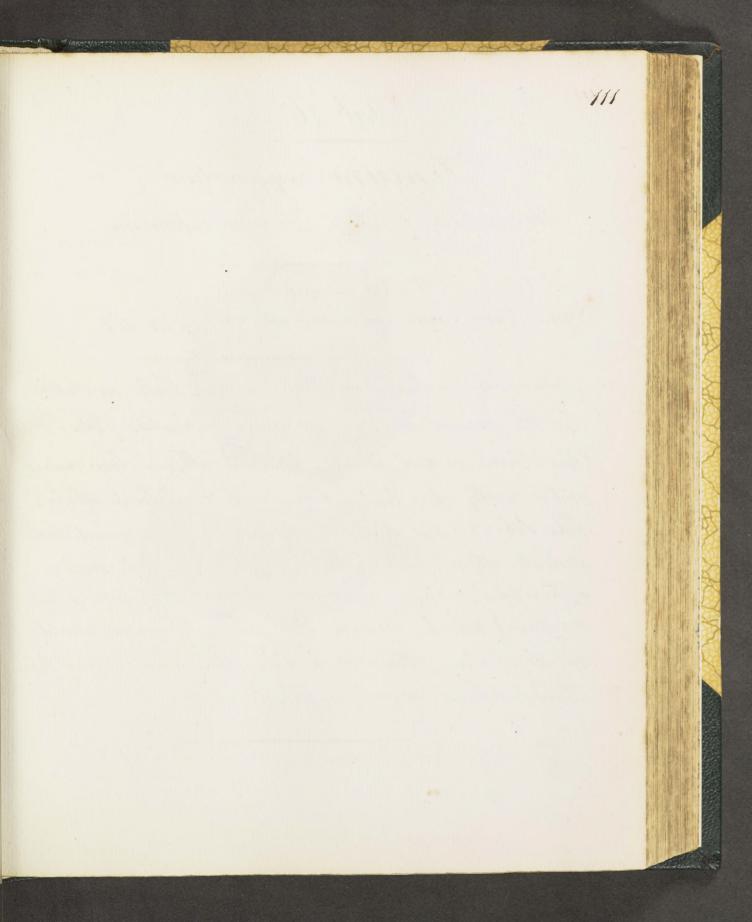
Crystallized Green Carbonate of Copper.

Die. s. Crystallized.

This came from nearly the same shot as the blue, and is equally race. The brystals are nearly the same, on differ in being thicker, and having truncations. These crystals were sent loose so easily tould be analysed. We therefore without analysis, consider these crystals as the same with what we have left perfectly crystallised from the place as Wales, &c.



Constallized Green Carbonate of Copper.



Jab. 26.

Timoum oxygenatum. Stalactitical Oxide of Time, or Calamine.

Syn. Line oxide ioncretionne. Hairy, 4.162.

In the present instance it much resembles Thos-Toni, and is mostly of a fine white, and coralleform shape white the spirit coursed with a surface finely coursed with minute spiritated brystate, giving it a soft downy appearance. Some moderate specimens from Scotland in its form. This is a zare specimen. corner from Wantockhead mine; in Scotland.



Oxide of Line in appearance like The Flor-ferri.

Tab. 27. Plumbum carbonatum. Straw- like Carbonate of Lead.

Syn. Plomb carbonate neiculaire. Hainy, 3.483.

Carbonate of Lead in Spiciola is found in some facts of Cormost, Devon Somerset. The country of Devilam &c. This spicioner is an everydar bundle of fibrous crystals, many of Them nearly tubular, survivedly formed among ochie, which quies it an odd appearance. The spicioner are chiefly found into inregular whenever, something like Short pieces of the It is upon an Argillaceous Son Stone with thin veins of Dwarts. M. Lains, has a specimen with similar crystals ; inches in length 5 in breeth, 4 in thickness. The crystals are in Similar groups, but comented by amorphous larbonate of Lead. The entire Specimen is of a pure milty white when Large as this specimen is, the crystals are not greater than in the one figure.



Straw-like Carbonate of Lead.

Tab. 28. Lineum oxygenizatum. Oxystallized Oxide of Line.

Gen. 6. Lincum. Shee 1. Congenization.

Gen. Char. Light gray, duchte, brittle. Fracture fortialed, brilliant; easily fasible, burning with a green flame and soluble in acids.

Spec. Char. Line in combination with Caygen.

Syn. Line in combination with Caygen.

Syn. Line, mineralized by Caygen. Phin. 2.133.

Galmei. Emmerl. 2.454.

Unic oxyde. Hairy, 4.159.

Calamine, our Pierre Calaminaire. De Liste,

Having project Blende or Sulphunel of Line, tab. 196. 2

167 he are glad to add perfect orystats of Oxide of Line.

It is the only specimen that has been noticed; It consists of heartiful to par-coloured orgstats dispused about the specimen some of which are too small to be seen without the help of a lens; others may be seen without one, thou in particular, as figured. Hitherto orgstats of Ocide of Line have been but title noticed in great Britain. It Smithson in Phil.

Trans. for the year 1803, part i. 17. after speaking of a

Wellowish Calamine from Derbyshine not electrice, Jays of electric lalamine - " that the Abbe Hany has considered this hund as differing from the other Calaminus only in the commissand of being in distinct orystals; but it has already, appeared, In the instance of the Derby shire Calarnine, that all the crystals are not elution by heat, and hence that it is not meanly to its being in this state that this species owes the above quality. And the following experiments on some crystats of chetricla. - Lamine from Pregbania in Thingary, can leave no dolit. of its being a combination of lack of Line with Lasts; sime The quantity of Quarte obtained, and the perfect regularly and transpanency of these crystale, make it unpopule to suppose the a foreign admirture of them. They were not Stratched by a him; a hunife marked them." According to belletier's experiments on the Calamine of Fribourg in Brisgars, which is undoubtedly of this Species, its composition Lauts . . . 0.50 Cala of Time . 0.38 Water 0. 12

1.00

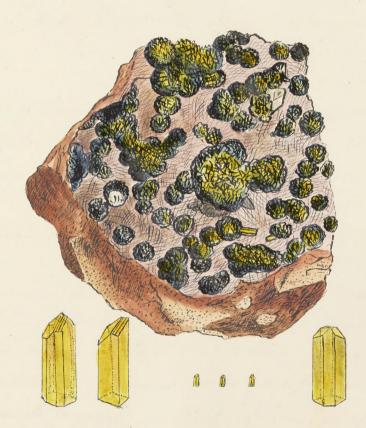
"The water, he observes, is most probably not exential; and in that case, from his experiments, it would be:

Daile of Line . . 0 . 261

Oxide of Line . . 0 . 739

1.000

" He also says he has found this species of latarnine aming The productions of Derbyshire in I mall brown crystals, &c.; 2 Their form seems, as far as minuteness and compression together will allow of judging, mearly or quite the same as those of lug-- bania; and the heast atom of them on being heated immediately evinces their nature by the strong electricity it acquires. On this Totalion in acids they leave Lanto." When me first looked at this specinen are did not hinow what it was; but on trial with the blowpipe, as it hoped into florculi and dissipated, we soon deter-mined it; There are some additional facts not mentioned in Hairy, which, atthough very minute, were sharp enough to be descended. It is curious to see a small portion gently warmed, how readely it attracts small Scrapings of paper. These tittle eligant crystate stand on a gangue of fred Sul-Thate of Bangter orystallined on the surface in little plates of a pushish volour, modefied like tab. 160. bottom figure. We also find, on the surface, Sulphunt of Them and Sul-- phonet of Copper in somewhat viregular groups of brystali, The first of a gray woour the latter of a golden how, and al--most in tetraidrows. There are some nearly metastatic crystals of Carbonate of Lime, and a few crystals of Galana.



Crystallized Oxide of Time.

Tinculm) oxygenatum. Oxide of Linc, or Calamine.

Class 3. Astals. Prder 1. Homogeneous. Gen. 6. Lincum. Spect. 1. Oxygenatum. Dio. 2. Smitative.

Oxide of Kino, tab. , was orystallized in a shape puntier to itself. In The present instance it occurs in the form of another substance, viz. Partonate of Lime: dee tab. This not a little remarkable that this oxide should Thus take the place of another substance, and assume the form, so as to become what is fermed secondary crystates When. any mineral takes the place of a orgotal, either by decomposing it or taking the cust of the mold first formed by another, it is called secondary, as it is so to those formed originally by the first Substance . Calamine Sometimes replaces like Much , &c.} They are for frequent in Oxide of Line as often to prove a very convenient help towards discrementing that substance otherwise not easily characterized, from the earthy appear - ame it commonly afunes. It is found in Flint their Doebyshore, and Mendify in Somesel Shine &c. In these Ships

modly taking the from of larbonate of Lime, and is often Attend in the prouch shown in the report figure. The Apper storface is a smoothish Oxide of Line, and beneath Still remains crystallised Carbonate of Line. In the lower figure The Oxide of Line has supplanted the Carbanate of Sime, and is cellular or porous, which is one of its character, whence it is often called bony, from the resemblance to the allular inner part of a bone, It is sometimes white but mostly coloured by Oxide of From, with various ochrey truts, and solden has any bustie. It is prouved in Large quantities for the manufactione of brafixe. and produces about 30 per ant Line.

Odine has been found perfectly ductile if healed to a certain temperature.



Oxide of Line, or Calamine, having taken the metastatic form of Carbonate of Line.

3-201

Tab. 30.

Cuprum carbonatum.

Crystallized Blue Carbonate of Copper.

Class 3. Metals. Ord. 1. Homogeneous. Gen. 10 · Cuprum: Spec. 5. Carbonatum? Dio. 1. Crystallized.

Syn. Cuivre oxidé blew. De Born, 2.329.

Azure de Cuivre. De Liste, 3.3\$1.

Skupfer laxur. Emmerl. 2.246.

Blue Calciform Copper Ore. Riw. 2.129.

Cuivre carbonaté blew. Hairy, 3.562.

When lawbonate of lopper has rarely been seen crystallised, especially in the freesent forms, I has not before been mentioned as a native of any part of G! Brit. This specimen is in the cubinet of G. Laing Esq! and comes from Wantoch head mines; Sow! has some fine specimes of this hind from lornwall.



Crystallized Blue Carbonate of Copper.

Tab. 31.

Pilex Quartzinn'; vav. Jaspis. Quartz-Jasper!

Class 2. Earths. Ord. 1. Homogeneous. Gen. 4. Silex. Spec. 1. Sure. Div. 3. Amorphous.

Syn. Quarta-Jaspe. Slavy, 2.435. Gemeiner Jaspis. Emmerl. 1.243. Jasper. Rino, 1.309

Some Jasper has the appearance of a Milband, and is called ribband or Band Jasper. Either term is intelligible, and may unsue the prospect well enough as to this hash of the Character, atthough the may with more profaily be called Stratificial. Jusper is mearly alled to flint approaching homestone, having rather and horny appearance. It is a farminance amorphous Quarte, somewhat altered by a mister of Argilla Porcelain Jasper is said to contain

Its fractive is smooth, conchoidal or Chintish Splintery, very little transferent at the edges. It is rather tougher but searcely harder than fint. It occurs in many barieties, and if is often marked with darker and highter stripes, but deldom very bright. Lull green is perhaps most frequent. The present figure exhibits a very distinct neatly striped win in part of a variegated rock composed of Quarte, &c., and there are Small threads in little veins hafting viregularly from it. It was pulmed up on the wash of Arishiro, and is in M. Laing of Ichin Thurgh's collection. Sowerby fear large makes of Jasper Striped a coloured nearly in the same way, from the Junes of Scotland. Jasper was formerly much word for large trinhets, &c., as it takes a good polish.



Striped Jasper.

Tab. 32.

Siles magnesiatus; van amianthiformis. Wood-like Amianthus, or Asbestus.

Dio. 2. Imitative.

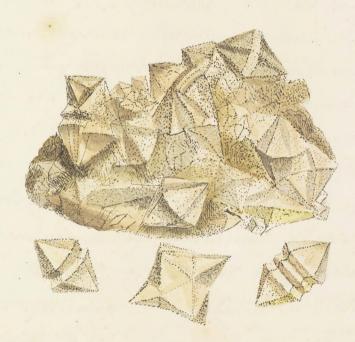
This is formed in upright and often covered fila-- ments, sometimes in master or plates. It is often moherated in a high degree, I resembles wood putrified. See The lower figure. The present hind is found at Portsoy in Scotland in abundance, croping in many derections through the Sechentine rocks. The upper Spermen was green Sowerby by L: Seaforth: This Tomewhat undulated, I vanis in colour, is harder in-Some parts than others. Some may be separatel. into florale with the nail Some will hear a good. polish; when it is brittle the Actionolite. The lower fig. same from Portsoy, List remarkable for felling a narrow flaw on the Serpentine in a very thin plate, I showmy fractures transverse to the Strice at nearly right angles. hard enough to take a good polish hard as common marble : This I many earthy subjects, retem Tooks. Wood especially the unchelating Staty solistiform



Wood-like Askestos.

. 141

Jab. 33. 142 Barytes varbonata This Specimen came from M. Halls Lead mines in Arhendale, forks' . Comous as the engstallitation is a most perfect dodecachal Amarts, with the 2 Heraidal pryramids meeting at their mutual base without any intermediate frism - You in Inarte! On further war - amountion soe find a modification peculiar to the selfand which has never been seen in Quarte &c. before. See the Right and left hand figures. It is so new in its nature that an expression is wanted for it, it cannot be timed markled, but rather articulated or Societed. These figures have one or two joints, length at the autual bases or filling up the interruption so as to form the plane of the Column, The vacancy is contrary to those of Carbonate of Lead, which it Somewhat resembles in the first instance: See tab. 3 .24 44 & may be of much whitely for external discrimination. The Carbonate of Barytes here, has a tendency to crystalline in groups, in a stillated manner : see mid figure. The whole of The Carbonate of Bangter is chiefly found on Carbonate of Lime, dis partly covered will sulphate of Baryte in fine speciale. Some of the carbonate of deme is in Garnet doducachons with short columns, an unioumnon form for carbonate of Lune: See tab 105. Zight hand outline



Carbonate of Barytes; Varities of.

This Specimen is part of a large aggregated mass Eschool is said to be mosty aggregated, and Tour-- matine to be chiefly imbedded in single ongstalis That came from Comwall, and is composed of numerous orystals forming several distinct varieties, where they are not confusedly intermixed with each other. It Leems to have been found no the vinity of a sed daide of Soon, as the colour about it midicates. In M. Gregers amount of the analysis Nuholson's Journal, vol. 4.312}, it appears that it Contains oxide of Stamum. It is somewhat remark. -able that the red School of Siberia, and the Targe Specimen of Purbellito or Tetanite; This was Imesented to Col I symes by the Ling of Ava, and Said to be worth 1000 } (as it has been called) in The possession of the Mit Hon the & Graville , are by some considered as varieties of Sourmaline. The Constals of this specimen show many of the faces which are generally Jound on the Tourmaline; viz . The & sided frism Immediate at the edges of formed with a 6-sided friom?

The same with two or more hevillings on the edges &c. The fractione is somewhat conchoidal, I the fromthis form is a whomboidal panellelepiped. Tourmaline is harder Than Laste. With moderate heat the heromes electric attracting and repelling where, &c. \ Fromign offenmens, Sometimes out and polished, are known by this property? a property Said to be in School Bergm . 2. 124. Kin. 1. 278. The latter observes that Bergman thought Line essential to School in the analysis of that of Mount Abans which M. Aww. days was probably Horne blende. Mi Airio. afterto that cohort was manual so from its brittenes; others say from the valley Schorlow where the was first notwice Analysis of Tourmalines by Berghan. Of Typol. Of Caylon. Of Brasil. Angill 42 39 50 100 100 100 Analysis of Tourmalines of Brasil by Vanguelin. Tiles 40.00 Lime 3.84 Oxide of ron 12.50 Oxide of Manganere 2.00 Water 2.66



Another variety of Tourmaline.

- Tab. 35.

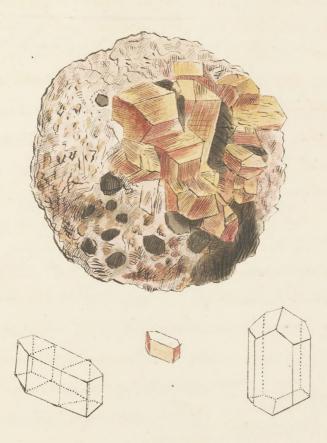
Silex Petuntse. Feldspan and Petuntse.

Class 2. Earths. Order 1 Homogeneous. Gen. 4. Silex. Spec. Petuntse. Dic. 1. Caystallized.

Syn. Feldspath. Deliste, 2.445. Emmerl. 1.226. Feldspath. Hin. 31. Feldspath. Hair, 2.590. Spatum campestre. Linn.

Feldspar is a very common substance, chiefly found in aggregates of various descriptions. in granites that some from Aberdunshire to have the principal highways in the metropolis, and remarkable in the Moor Hones of Devenshire on London and Westminster Bridge, when the simbedded crystals are very bold and distinctly seen, especially after rain. This specimen came from near Monymush in Aberdunt: The crystal, hing nearly independent, allow us to see their determined form distinct from the gangue, which is more confused. Theldpar with Quarte and dark crystallized Mia, forming a Granite. The little middle figure was easily detached, and makes a short-sided prisme.

I have fut the geometrical pique of it at the left hand, Showing the form of the fractioned thomb, and the lower side of a frism with a triangular face, formed of a bevilling from The edge of the sharper angle of the side of the huncated eno as in the little middle crystal, which also shows parallel machines or flaws. The right-hand modification is rather More common; vis. a 6- sided column with & terminal faces, one primitive, or parallel to the fracture of the crystal as in those before spoken of; and I dereitly opposite, formmy at each end of the prism one printine face & one opposite Anneation, atternating with those at the opposite end. These are of the usual colour, vis. a letithe lighter red & White or transparent Weldspar being found at Adula is called Adularia Moon stone, Feldspath nacre - Hang &c.} They are almost too hard to be scraped with a honeye, but Heldspan varies much in hardness. The crystals in the Moon Stone on Westminster Bridge stand above the Yest of the stone, are consequently of a harder nature, and do not wear so fast in other instances it is found decom. - posing, Soft, and nearly powdery & this is often called Tha: coling we is frequently found in China manufactories }. The primitive faces, of those figured at the agrex and base of the crystals, prequently smoothly and with faility, The other 4 break irregularly or roughest. The former generally show some sparkling illimitions, which are very apparent in some specimens, and some to distin-- questo which of the terminal faces is the frimitive one.



Crystallized Feldspar.

Calx carbonata.

The hills of Southand mean Edinburgh, are famous for I ohunde & an interesting substance used in porcelain, The Tegular formation of The Carbonate of drine placed so distinctly within the hollow is worthy of notice. The Surrounding frinky Anarth, sir bundles of title 18 stilled crystals, times the cavity, and the jasperine Laurte & It I may so call the red coat & decine to terminate the whole fieldle, which is surrounded by part of the rock of a-Brown how, called trap, in which there are smaller or larger pubbles sometimes meluded, & sometimes hollows where others have been entrapped. These hotfour are sometimes souted with a green or blue earthy substance called by some the Green Earth of Veran, probably owing to a mixture of From. The Carbonate of Sime is composed of half a very aute whomb with 8 largish faces of the aquiare, & I smaller ones probably belonging to the firmitive Thomb: See geometrical fig. It is rather dingular the same hind of Stones excluding The Trap have been found in Westshire a small depth. ander ground.

The part of the Book this came from Jeems to have heen a mixture, a chaotic one, apparently a continual deposition has taken place, more still forming, and enclosing The meeding till the whole matter was deposited. In the mean time each elimentary substance, aucroing to the particular formation of its molecules, & the nature of its meaner mughbour, formed, ether by itself or into combination. Thus the Carbonic And and Lime united together, so as to construct a brystal in the middle of this hollow as complete as winnistances would admit of, depending on the quantity of larbonate of Line received in solution, perfecting some faces, and depositing the other molecules orregularly. A Small things of Soon Stained The Solvent, and course quently the Crystal toward, the top is a little coloured. The wirrounding Lmarts has also crystallised under Termilar wewmstances, I is domewhat stained with The Oxide of From among the brystals, giving this fining a fin hish home, which is again conspicions at the outer side and color next the fries of compound Took.



Crystallized Carbonate of Line &c. in Trap.

Siles magnesiatus; var. amunthuformis. Silky Amianthus, or Aslestus.

Div. 2. Imitative.

This heartiful substance is found thirty in The Iste of Anglesea, North Wales; and at Johny, in Sorpentine tooks, as they are mostly called. It is generally found found in the fibures & cracks, paping The a sort of crystallisation from the sides to the contre in infinitely small officiale, being Sometimes quite andurated, though retaining meanly the Jame appearance no that which may be easily separated by the nail. The apper figure is from Sortsong and is miluded in a somewhat woody Ashestor of a light whow. The lower figure came from Wales in a dirty with Supertine, I is partly covered with the green Nephrite or sac stone, nearly approaching that from the Molicia Islands, of which the Natices make Their hatchets. Amounthus or Ashestos, was formerly ased for preserving the asker of deceased persons, by

being woven into a cloth to wrap them up in while furning In weaving it they use other threads to afrist but those burn away leaving a perfect amianthine doth; a fine speimen of which was fately meser-- wed at Chomes. See D' Smiths Tour, v. 2. 201. 3and by being incombustable it retained the of ashes. Scotland and Wales have a sating vanety which runs in veins among despentines. and dometimes among a hund of Steather. It Danies in colour, but is most frequently white, sating and so much resembling sith that there can be no better comparison. It deparates into silling flament. of equal pleasibily & finench with the most attenu. ated Thread, informuch that they appear to divide begond our power of examination. They seem dolid , as do the framents of all stones of this matune.







Silky filamentous Asbestes in Serpentine Rock.

(Tab. 38)
- Calx carbonata.

Crystallized Carbonate of Line?

Class 2. Earth. Order 1 Homogeneous. Gen. 1. Lime. Spec. 2. Carbonate of Lime.

Spec. Char. Sime with carbonic acid effervesces with the stronger acids, and becomes quick lime in a strong heat.

Syn. Chaux airie. Born, v.1.28.

Ralk-stein. Emmerting, v.1.437.

Nërated or mild cala . Kir. v.1.75.

Chaux carbonatic. Hairy, v.2. 127.

Div. 1. Crystallized.

Syn. Spath calcaire. Born, v.1.107

Stath spath. Emmerling; v.1.435.

Foliated and sparry time-stone Rir. v.1.86.

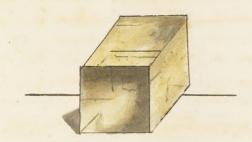
Calcareous spar. Bab. 7.

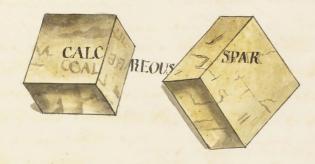
Chause carbonatie. Formes determinables. Haig,
v.2.130.

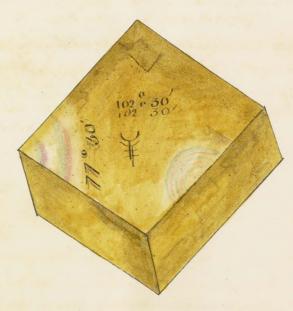
Found chiefly in home - Stone rocks wherever they own in Great Britain, as Derbyshire, some parts of Wales, Willishere, De. wonshire, &c.

It is assily scraped with a hinge; fracture in famine parallel to the nucleus, which is shomboidal, its obtuse angles being 101 30, its acute 78°30'. When sufficiently transparent, it gives a double refraction. It is never quite opaque, the colours are mostly white or lightish brown,

sometimes neddish, seldom yellow or Green, scarcely ever crimson, blieish, purple, or black. lepper figure a nearly equalsided fragment, to show the nucleus and the double refracting property, by being placed on a straight line, which appears displaced & doubled when viewed through the upper apposite face. The sides only neflect the object, for we cannot see a figure through the edges of the crystal. Middle figures the same, somewhat thismer, placed on letters to show that the refraction divides towards the obtuse angles. Lower figure, a rave fragment of a fine yellow. The prismatic colours caused by the flaws are in the regular order of the rainbow: the brightness depends on the polish of the surfaces, I the soveness of the flaw nearness to the surface, &c. The upper highler fraction is paler, because The more opin it is the less visible the colours. The opaque white at the edge is in consequence of a blow in a direct Tion contrary to the farmina, which always bruises it for 102. 30 nead 101.30, 78°30. vide D. W. Al. Wollaston & learned paper on the oblique metraction of the Testand crystal (Bhil Trans, for 1802, part 2, p. 381), for an amount of its refracting property.



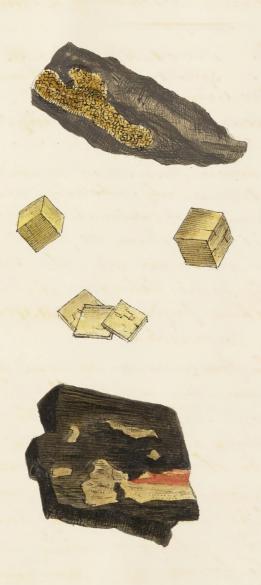




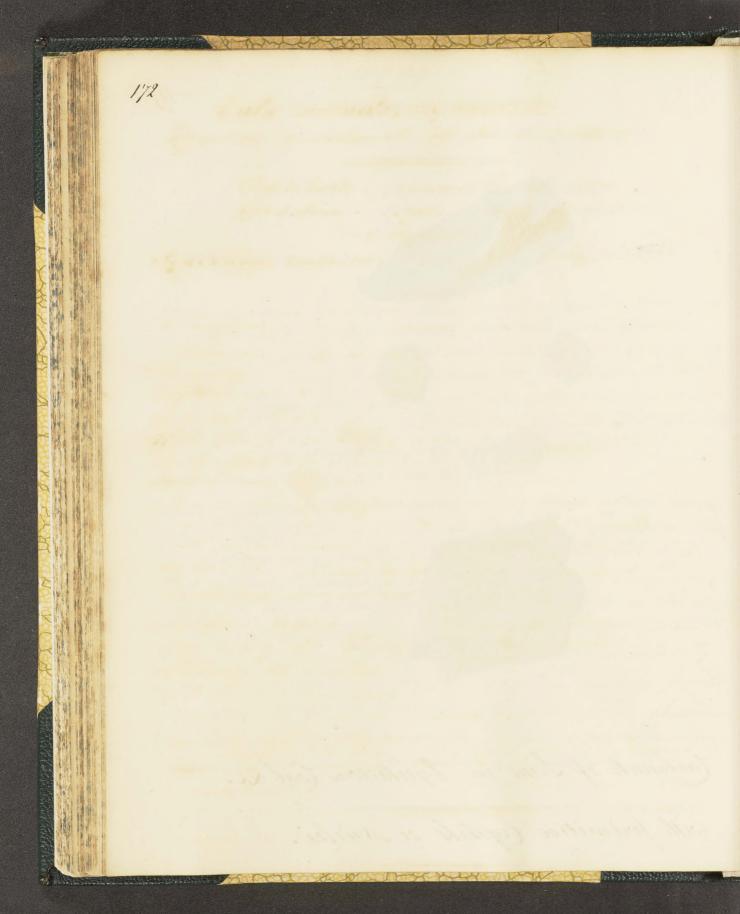
Carbonate of Lime, or Calcareous Shar in Fragments

106.39 Mr contender primition. Continue spece to the me winds of horizon colored Change feeling men at 1150 the line of

Sab. 39 Calx carbonata primitiva. Inimitive orystallined carbonate of Lime. Gen 1. Lime. Spec. 2. Carbonate of Lime. Div. 1. Crystattized. Syn. I have car bonatee primitive. Stairy, v.2. 132. Upper figures. We believe these small crystals refinesented on the piece of pyritaceous coaly substance, are the fine nucleus or primitive crystal of carbonate of Line: It appears to be a rare thing to find them so perfect in Britain. Those that are larger are either foreign or par-Taking of the pearly luthe belonging to the Sidero Calcite of Kirwon, v.1.105. Chana firifire, Hair, 11.175. The line of separation is hardly discernible. Lower figures. The fractures in the make afford an ex-- when help to discorn these as little flat primitives; those delached agreeing with the fractures of the flat map. These atthough perhaps not before noticed, may commonly be found in thin Tayers, or deparate in the small partings of the Newcastle coals, from nearly pellines to nearly opaque white, not unfrequently fire matrially coloured, or coaled with silvery or golden coloured pyriter I may some times he found very beautiful. Wishing to make The subject familiar, I fell a pleasure in suto ducing a thing do easily procured.



Carbonate of Lime in Pyritaceous Coal &c.



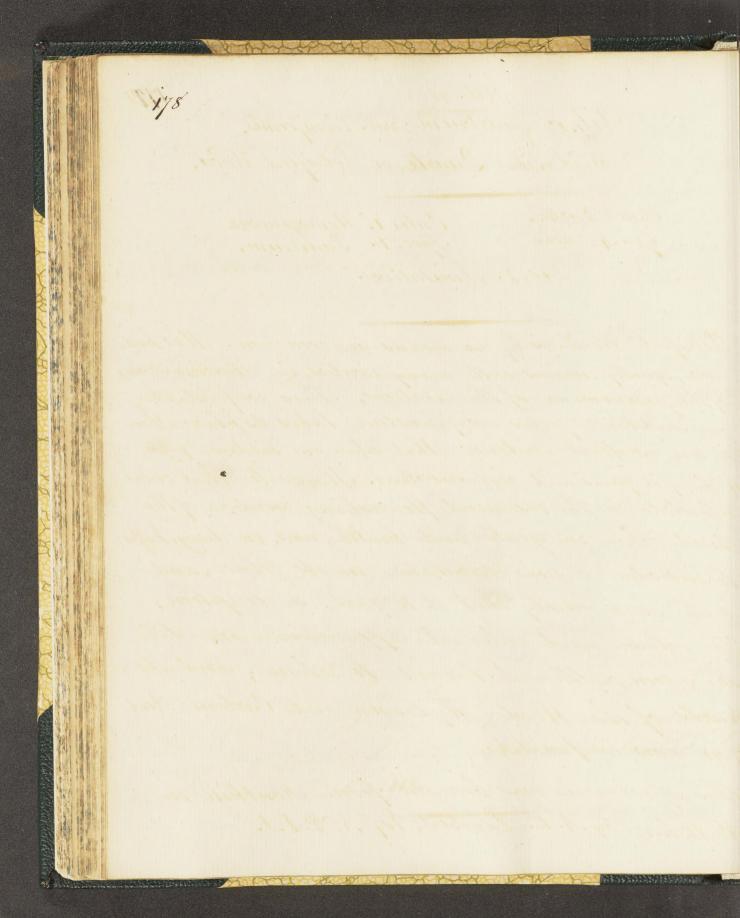
Jah. 40. Cala ranbinata, car inverse. a morning of Junior Genetican sudmette dummet le cara, ordette

Jah. 40. Calx carbonata, var. inversus. Erystallised carbonate of Sime, inverted. Class 2. Earth. Order 1. Homogeneous. Gen. 1. Lime. Spec. 2. Carbonate of Lime. Dio.1. Crystallized. Syn. (hana carbonate inverse. & E. Hairy, v. 2. 183 The upper figure is a curious specimen of crystallihed the inverse order to the famina of the muchens, and their angles so near to those of the fininitive, over which it is formed as to look the the same, differing only in one degree: 102 30 77 30. This is from Sull-y-cockin, near Conway, Carnawonshire out of a Lead and Blend mine, it is stained probably with oxid of Iron. The edges are more transparent and Thining Than the other parts. The nest of the maje or matrice is light is not readily perceived without breaking; when they are found very regular. When the term Cabe carbonata is used its means brystallined carbonate of Lime. The Lower figure is from the summit of Moel y hirad. durg, a lofty hill bounding the vale of lyde. This is a Specimen of a more confused orgotallipation, The red. oxid being very abundant. The crystallined parts are deparated in viregular columns of a romantic appearance the little While Strala at the bottom have settled be-Tween the red ones in a curious manner. The fracture is viregular, depending on the confused famina, the hight falling on the flat sides of which occasions a Thining tustre.





Carbonate of Lime with half relieved Crystals coloured by an Oxyd of Iron.



Class & Earths. Order 1. Momogeneous. Gen. 4. Silix Spec. 1. Quartzum. Div. 2. Smitative.

Detrified Wood is by no means uncommon. It is how. ever, equally curious with many varities, in showing some of the phoenomena of the creation, Thus we find, when one substance paper away, another takes its place. This is an excellent evidence - that when one substance passes to decay it forms and organizes others. The water that once assisted in The rise and flourishing verdure of the wood when in youth and health, now, in decay, helps to introduce a new substance in its place, and with such miety that it is quite a deception. The colour and external appearance are still The same, although turned to stone; and the parts of the Wood, Hydrogen and Carbonic Acid are now evaporated.

This specimen was brought from Fronthill in Wittshire by A. B. Lambert, Esq. N. D. L.S.

It was 18 miches long, and 12 in wieumference, a fine Musimen to show the nature of the change of place. oir. The Silea replacing the sarbonaceous principle of the wood; The Silea in Solution, with were taking place of the former substance particle by particle. It is ad-- mirable to see the longitudinal and lateral fibres. so perfectly arranged and coloured, with so little disturbance, that the very craches and broken parts are deter. ted with the utmost precision. Topsibly the Oxide of Tron, or colouring substance, does not evaporate with the other principles: Thus the colour of the parts is identically preser. - wed. The specimen is externally somewhat granular, with the appearance of a fine-grained compact Sand the more clease in the centre, resembling Flint, and in some parts almost Opal. (Wood wholly opalized is sometimes found) Specimens of this nature are found in Freland, and in Warwichshire, warriously Stained, and otherwise acted upon in the same piece, showing that the wood had been more or less decomposed, or was decomposing in dif-· crent parts, before the metamorphosis had taken place Towerly has a piece from Aspley, which has hollows left by some insul very perfect. A most remarkable Specimen of this hind, is discribed in I Smith's Tour on the Continent, v.3.113.



Wood-like Quarta, or Betrified Wood.

Tab. 42. Calx carbonata, var. margaritacea. Pearl Spar.

Class 2. Earth. Order, 1. Flomogeneous. Gen. 1. Line: Spec. 2. Carbonate of Lime. Dio.1. orystallized, orystal primitive.

You. With some iron and manganese. Insthe pearly; crystals

Syn. Sharry tron ore. Riv. v. 2.190. Spathieger eisen Stein. Emmerl. v. 2.329. Warner.

Chaux carronate firi ère . Haiy, v.2. 175. Searl Spar. Bab. 18.

Slaving so distonguished an appearance from other carbonates of Lime, this was obtained the name of pearl spar, a name it naturally suggests, I by which it is in ge:

"weral easily recognised. He find however, like other tripped in nature, it has its gradations, and consequently blends itself with substances to which at first it seems very title allied. It may be readily braced, as formed from the primitive crystal of carbonate of a formed from the primitive crystal of carbonate of time, to an tron one, consisting for the queater part and ocide of from and snanganese. The progress appears and ocides of trong and distinctly marked by the manner of the coursely and distinctly marked by the manner of the primithe englals which are in the forms of the primithe shoots, and are white: sometimes knowever it approaches the appearance of wory; and as its

switstance becomes pearly, The micher seemes to be separating and wing from about the angle of 30 to about 20°; see the Signers. They mostly appear of the natural hearty history, but are often at length more curled and darkened, and Thence may be called shathore from ones; whats they may be called non over whenever the common browner what indicates is much. Those, however which have The forms and fracture of crystallised warbonate of time may be placed as such while they retain The tohitish pearly hustre? Tearl spar analysed by Bergman contains Lime 38 Oxide of Fron 38 Oxide of manganese ... 24 By Wolf. Carbonate of time 60 Tron 5 By Berthoflet. Carbonate of Sime 96 Oxide of Iron and manganese ... 4 Thus different analyses, showing a difference in the pro-- fortion of the substances of which it is composed, deine In to me more or less an Iron ore.



Two Varieties of Bearly Spar , or Bearly Carbonate of Line .

Jab. 4-3. 188 Cala carbonata, var. metastatica. Carbonate of Lime, var. metastatic. Class 2. Earth. Order 1 Homogeneous. Gen. 1. Lime. Spec. 2. Carbonate of Lime. Div. 1. Orystallined. Var. Metastatic terminating with aguisard and other faces. This fine yellowish crystal shows at the apex three pol--ished faces, which are parts of the equiasced crystals; several others next to them show the approach to The primitive shoul, and three primitive faces; the rest is part of an unequal - sided or flathish me: tastatic. The double refraction is seen, when held in certain directions, by the prismatic truts, which we very beautiful, and in some positions catch the Tays of light, so as to show them in great abundance in the numerous flaws; which flaws would be some detriment to the specimen, if this appearance did not so well compensate for them. They also serve by their direction to show how the fragments are obtained which ashibit the nucles



Part of a large Metastatic Crystal of Calcarious

Spar with an Apex of many Jacets, not polished;

terminating with three natural polished Jaces

of the Equiaxe.

Plumbum combonatum. Carbonate of Lead.

Class 3. Metals. Ord. 1. Homogeneous. Gen. 13. Lead. Spec. 2. Carbonate. Div. 1. Crystallized.

Spec. Char. Combined with carbonic acid.

Syn. White lead ore. Thinw. v. 2.203. Jameson.
Weißes bleiers. Summerl. v. 2.388.

Mine de plomb blanche. De Liste, v. 3, 380.

Plomb warbonoté Hairy, v. 3.475.

This specimen came from Wantock Head mins, mus Glasgen, forms plated onto-decactors and other medifications, inclining to the appearance of sulphate of barges by forming a sort of Premation on the edges. Thus he left hand-figure is minated on the edges of the original skin-stilled cohumn, forming sie stilled faces. Thus we should have 48 faces if they were regular see the dotted himes on the cohumn of the right hand figure, and also the apea which is terminated by six traperoidal facis. Inis is a cronous modification. The sufficient of Lead, or galama in most cases where it is decomposing to form curbonale of Lead, has a Chrish tarnish. It sometimes also becomes



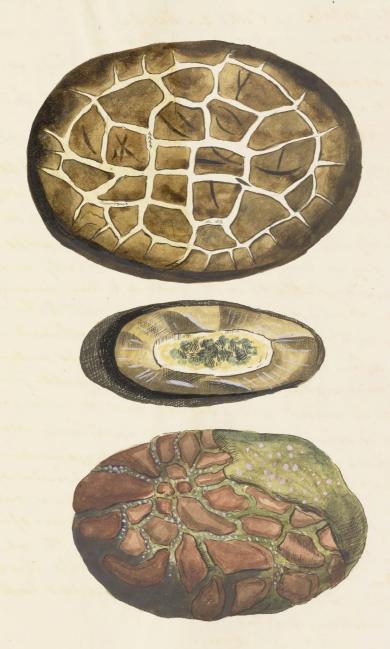




Dodecaedral crystallized Carbonate of Lead formed in Plates.

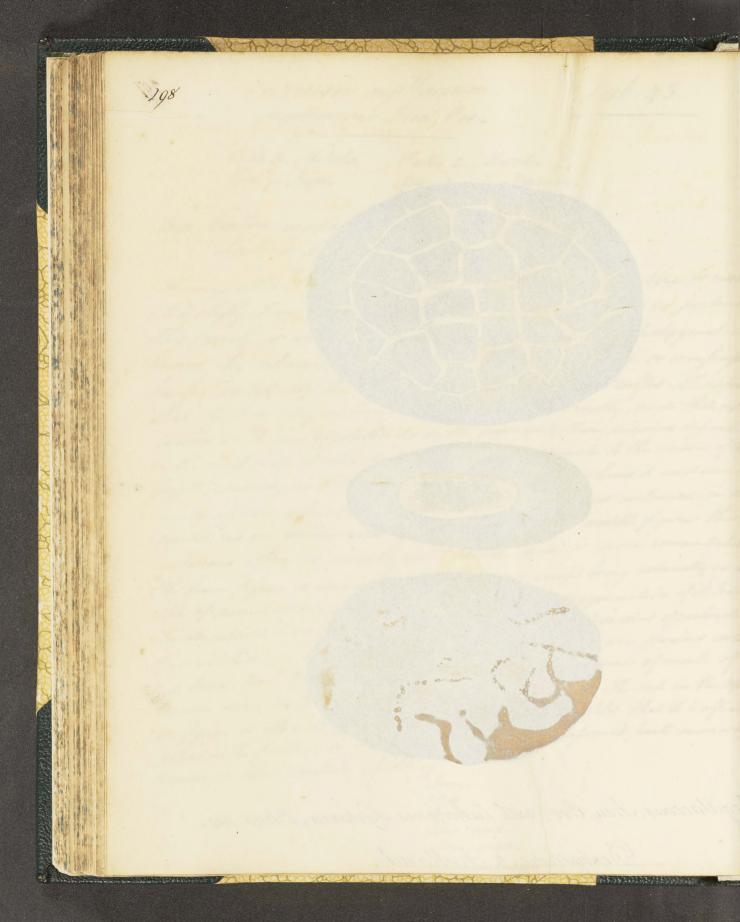
101.45. Signifficant mount. Gen. Je Juge. Among the ten over a ment that of the sol whom to war

Jab. 45. Ferrum angellaceum. 296 Angellaceous From Ore. Class 3. Metals. Order 2. Mixed. Gen. 7. From. Spec. 1. Argillacious. Syn . Comon argillaceous From Stone . Kins. v. 173. Lowland From Ore. Bab. 199. Among other From ones a great deal of the sort above is not Tix chifly Iron mixed with clay, produing 30 to 50 per cent. This variety is admired for its being divided into polygonal co. -humms by calcarious spar. It is found in round or compreped fumps, called by the miner cats' heads or cate' dealps. It appears that the Iron clay in humpes has cracked internally, and that cal. · Carrons earth has orystallised in the firsures (These divisions defend on the osciff itudes of what dry, hot I cold, and approach to the nature of the quanto canseway in Ireland; &c.) The Copper figure shows it as it some monly appears when cut. Bitumen is sometimes contained in the craches, as we various other substances. In the middle figure the Calcanon spar is mixed with blend, and is more concentrated. The lower figure is dumilar to the represent , early being externally in a that of decomposition, As rednep is caused by the oxygenization of its Iron. The met outside is so far decayed as to expose the divisions of carbonate of hime. These are salled Sepparisms, of which there are various sorts; and besides those of iron stones thoone are to be found some of more of various sixes, at Bristol, It Tole of Sheppy, Michmond, sec. The Sort in the M. per figure is often so much admined after being split that it is often polised. The fractione is conchoidal, earthy, I the component harts mone orly legular in their makere, holding Tilex, and Manganese.

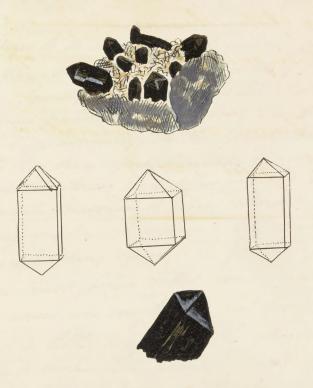


Argillareous, Fron, Ore, with Calcareous Septaria, Blend, &c.

Derbyshire & Scotland.



Jab. 46. Good specimens of oxide of his with the proper foursided to -- funn and corresponding pyramid, if the edges are not be. welled, or truncated, are somewhat rare. Some crystals on The fredent specimen are of this form, and others are hun. cated on the edge of the whom, making a fifth face; which truncation is generally continued of the edge of The fyramid. A four-sided column without thencations, or a fryna. anid, would be a great consisty.



Oxide of Tin in Dodaciednous, with eight Isosceles Triangular faces, and four Rectangular ones.

Siles Quartrum. Agate Lebbles.

Chass 2. Earth. Order 1. Homogeneous. Gen. 4. Siles. Spec. 1. Quartz.

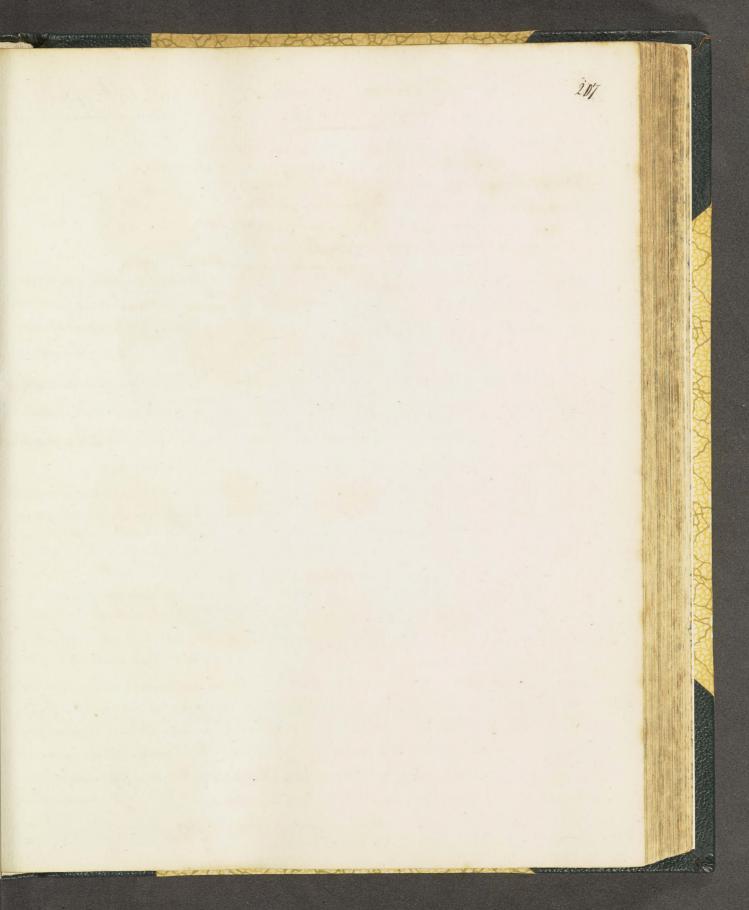
Syn. Quarta agathe Spheroidal. Hairy, v. 2. 423.

Agate appears to be a very antient name given to this hind of quarthose Stone. It is found on many parts of our shore, as at the Bill of Sottand, Lowestoff, and on the Welch, Scotch, and Isish coasts. It is cometimes found inland, about the Loches in Stolland In. fand &c; and occasionally, in the Gravel- puts about London, &c. This spenies has been much admired on account of its resemblance to many oriental stones; and differs from our common pebbles by its toughness, which preserves it large internal flows. According to the Fransparency or woow it is more or lep valuable. They will often hear cutting & polishing equal to the foreign agates. The agates found on the Sea- wast, being rolled and jumbbed together by the fore of the waves, are roughened; but being hard, this rughing linetates but a little way, and the utmost force they expersione Jeemes only to make little windar flaws; The right hand figure is from the Bill of Sottand. Its outer surface is generally as here refined top specimen represented, but sometimes whiter. The left hand top specimen came from Lower toft, as was purhaps, formed by aggregation, as most agates seem to be (hopsibly in a trap rock,) as the Cloudy appearance within seems to indicate. The near figure is of a rougher formation from N. Wales. The smooth one on The right hand, with a little red about it, has been called a Car.

netian. it came from Lough Neagh; but it much be observed that agates, especially British ones, Should not be confounded with oriental barnelians, the fracture of the agate not being so thining it the Stone much hander (this is well known to the tapidaries, seal engrowers, &c, as it with more labour & dramond duch to work them.) The heart operionen on the feft is a rather hellacid fragment with the edges partly blunted The inner figure on the same fine came from Derbyshire. The Smallest of the two lowest one is apparently a fragment, temarhable for the resemblance to part of a septarium; the inner part resembling the When right hand figure with a coal of a different cofour. The fargest Signe at the bottom has a revin the appearance, which these others accasionally have it came from Incland. Scotch agater all resim · ble these; but what are found there, especially near Berth, are admind for being striped, zoned, forming onyxes, or spechled with various blok Sc. Thereages. Moreas are a sort of agate with dendrites or figures the springs, trues &c. which seem to be tron, some say manganese, Some called German Mocoas have figures by art instrocliced witothe How which in time desappear. no stones worthy to be termed Mocoas . Trace been found in ly! Britain. We consider agate to be nearly of the same nature or a variety of chalcedony. It is said to contain Silex 84, Argil.



- tgate Pebbles.



Sab. 48. comme continue. Spec. Char. Contains sulfither? and From Ore.

Syn. 13hue martial earth . Riv. v.2.185.

13hue cisenerde. Emmerling, v.1.359.

For azure. Stany, v.4.119.

Very common in marshy grounds at different depths in most parts of the United Kingdom. The Upper figure some found net with about 4 feet dies in a sandy loam, mixed with rook &. other vegetable remains, at the digth of 9 feet, it was mixed with a black itay tury, leaves, hazel -nuts, &c. It is sometimes among earth with the remains of theirs. some was once found on the Shell of the Mytalus anatimus in Hyde- work. some found in Scotland. The tower figure represents it as found near Rennington & Lambeth where it is common about a foot under the roads in a dvity grav. -elly soil, partly hardened and smewhat appearing like the Budding There it adseres to the publies, but more particularly to the hollows where they have sein. In frying to discover the nature of this sub-Mance, some of the provest of the sort was exposed to gentle heat which Toon deprived it of the blue bint, emilling a sulphwieous exhalation, north a blish flame, & left a dark ochry brown substance, which proved to be an oxid of Iron. no prespec and was detailed by the usual method. M. Rivin Jays the colour in its native setuation when not reposed is white. This may sometimes be the cave, but ours was blue even when first gatheres & broken. Lustre none . Tracture dusty, of The upper figure; earthy and compact in the lower. Water does not Change the colour; Oil darkens it. Rhaproth thought this mineral contained phospitions, but M. Rivisin Hints "The inflammability of this substance must proceed from some other principle, probably carbon, perhaps an astringent substance"





to Moots, &c. Lower fig: nearly the same in
The Cavities, and about the Bebbles.

Cals Fluor, var. cubica.

Tab.49.

(Jah 2. Earth. Order 1. Homogeneous. (jen. 1. Lime. Spec. 4. Fluate of Lime. Div. 1. Crystallized.

Spec. Char. Lime combined with flowing acid, which acid has of flint.

Chaux fluoree. Born, v. 1. 355.

Flus. Emmerling, v. 1. 515.

Fluor. Fluate cutique: Flaing, v. 2. 247. A. A.

How is divisible into regular ortaedrons. Spec grav. 3 0943 to 3.1911, and according to Slavy has a regular tetraedron for the integrant molecule. It is mostly found crystallised in cubes (more rarely in octaedrons and their modifications) in many parts of Great Britain, as Derdyshire lumberland, two places in Scotland. Aberdeenshire and Sheetland; (Jameson, v.1.151.) also in Decon. & Cornwall. It may be found by the blow pipe into a transparent flat. (it is upt to crack & disperse; which may be prevented by powdering it) Its refraction is enight. The powder projected on a hot poher gives a phosphorescent light, of a bright and sowing purplish colour. Some from lumberland, greenish within, I of a dult habe crainson on

The outside; which gives this glow in quat perfection, in tather large pieces, without cracking or dispersing so soon as wal; and if not too much heated the prices will do again. In this it greatly agreed with the chlorophane of Siberia, which much resembles it in laternal appears ance, but gives a verditer green glow on exposione to head without falling to prices. The fluorie and was discovered by Scheele. It may be disengaged from the hime by means of delute sulphu. the acid, and has been used for etching on glass. One of The methods is this. Having a plate of Glass Thinly cound with work draw with the point of a needle what wer may he divined cutting through the war, placing the bold, horseontally, so as to retain the fluid for surround the plate with a wax wall;) Then having some fluor jounded Is fine as dust spread the over the whole within the war. our wall. Mix one part of sulphuric acid to two or three Water it pour it on gently. The strength of the strokes will defend on the quantity of dust of theor, I the strength of the acid that is to decompose the The noing fumes will eth another prepared glass, if places so as to receive Them, furhaps more regularly. The acid for chemi: tal purposes is commonly prouved in a leaden ap. paratus. These two specimens are of the most common appearance of floor. The repper one deviates a

With in form, the middle rule being interrupted by the side ones, contracting its upper part, so that the lower to much the broadest. There are some orystals of what is commonly called 18 sided quarter sticking about them, as wend with the floor of lumberland. The fower figure seems attogether of a fine deep purple but it is only thinly coated, the moride being of an olive green. The faces are remarkable for having signs of the famina of superposition, indicating 4 sided pryramies, the aper of which appears at the edges of the whees where in contact. Fig. 1. shows a corner of one of the cubes replaced by six minute mangular facets. The upper figure has some signs of superposition, though startly more than scratches, giving the specimen a greaty appearance. The heavingular cavity is where a rystal of quark had thick, and shows that the Side mierted was not regular; hence it appears that the crystals of quark are not regularly 18- sides, their shape being interrupted by the fluot.





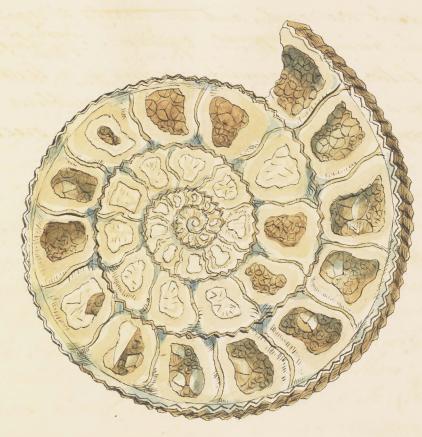
1-11

lip: Fig: Thate of Line, the middle cube interrupted by the side ones. Tregular 18-sided Quarta striking about them. Low: Fig: 2 cubes in contact showing the signs on their faces of 4-sided Byramds, the summits of which seem attacked by the edges of each

Gen. 2. Lime. Order 1. Homogeneous. Gen. 2. Lime. Spec 2. Carbonate of Lime. Div. 1. Crystallized . Var. 1. Equiased.

The figuring of this shell will not only serve a geological purpose, and show a curious crystallination but helpto explain the flattened crystals in plate, which are not easily understood, as the times they form m the drawing give but title idea of flatness, and may Seom to express the perspective of a cube, especially as we are not much anustomed get to these representations. This is the Helmintholithus Amonites of Linn. Gmel. v. 3. 411. usually called Cornu-ammonis, of which there are many species found in the petrified state, (This spaces and many others are found only in this otate, never recent) abundant in many parts of Great Britain. Abroad they are often siliceous, or at least contain siliceous crystall thations; but in Great Britain they are mostly calcare: ous, found in Limestone rocks and marly places. The shelly part may some of it he the remains of Organic Ameture. The crystallined internal parts of hells and stones afford a curious subject for inqui Ty. In the chambers of this nautilus, for so the hving genus

130 called by Linnaus, see Gmel. v.1.3369. The matter of crystallina - Tions may have passed through the abreolus, or little hole, to each partition. In other shells and in geodes, it must be otherwise. The constals are rough, and in nearly a regular deries from the primitive to the Equiace. The faces however of the latter are counded, giving it a lenticular form They are also somewhat striated, resembling the lente war crystals of cortain spathose iron ores.







(arbonate of Line, or Shell, containing various, lrystallisations in the Chambers.

Mo. Ste

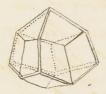


Shelly Lime, and sandy Silea or Flint, combining with the Lime, &c.

Jab.52. The outward aspect resembles the grey or vitreous copper ones, be. ing of a dull grey colour, and very roughly formed, as it were of crestain muclei, which recived in the direction of the solid points, or angles, give a reculiar bright shining glave. Its faces are more determined & flather than in the other mentioned: the Three Traperoidal ones of the same are not finished (see the right hand middle figure), but teave a triangular face, trans. berse to the original face of the tetraccion, forming one cqui-- fateral & three isosceles triangulas ares one each side, which makes altogether a new 16-sided figure. This is a modification different from any before mentioned. Hairy only finds the modification from the bevelling of the edges of the betracidion, as in his grey copper & copper pyritis, tab. 70 & 71, fig. 78 to 89. However, the faces o on fig. 81, 85, 86. 87. 88, 89. approach it; but the angle of incidence is that of the Thombordal dodeciedron with isosceles Frangular facis. Thosh of the crystals in this group are truncated at the edges, the fig. 27 of Kome de l'Isle (dee The geometrical figure at the bottom). These stoping hunca. -lions add 12 narrow pentagonal faces; & thus we have a new figure with 28 faces. Coppur pyrites may be known from From pyrites by its brafog wolour, smooth fracture, and not striking fine with steel.







Sulphuret of Copper, with the Timperoidal Dodecaëdron and

232.

Silex Quartrum, var. aggregatum? Quartrose Budding Stone.

(lass 2. Earths. Order 3. Aggregated. Gen. 2. Silvac. Spec. 1. Quartrose.

Syn. Quadding Stone. River. v. 1. 360. Bab. 131.

Quarter- agathe breche. Hairy, v. 4. 461.

Boudding R. De Liste, v. 2.481.

This is not race in gravel-fits, in many counties of England, Hertfordshire is however most famous for producing it. Indding Stone is little known abroad, and is therefore estimed in Germany, and other parts of the continent, an an English ravity. Sowerby thinks it is not found either in Scotland or Ireland. (Though in Scotland they call some rocks that are avery course aggregation by this name). The most perfect and most esteemed Speumens are those which have the closest and finest siliceous lement, with the greatest number of variegated publics, sometimes with famiful representations: see left hand part of the figure. They are much the same in hature and hardness throughout as the flint publics before mentioned, and bear a polish equally well with them. The upper figure is one of this dort, but is better in some parts than in others. The sides show an imperfection, as Some of the pebbles are broken out having been rather moulded.

Than comented, and almost loose when found. This speimen is from Horspordshire, where some people after about a century age, ble buil into trinhels, smefflower, coat-buttons, &c.

The lower specimen came from South-end, Ifsox, given sow: by Lady Waron. The Opposite shore, at Sheppy The, Kent, has many curieties of it, probably washed out of the women marke lifts of that place. This specimen is somewhat too sandy, and not close-grained enough to hear a polish. They are some strines found very large, many feet in diam: some was formerly for querns to grand own.

Probably the name was given by the English Sapidaries:

Brobably the name was given by the English Tapidaries; and as M: Thorwan observes, they ment, by the appollation of Budding stones, to express flint pebbles of any colour cemented with a substance of the same or a similar hardness, so as to make an equally compact stone for polishing.





Ludding Stone.

Tab. 54.

Cala combonata; var. petrosa.

Variegatus Lime-storie; or Tirie Manble.

Gen. 3. Lime. Spec. 4 Carbonate of Line.

Syn. Common compact limestone. Syst. Min. Jameson, 477.

This beautiful variegated limestone somes from the hill of Belephetrich in Time one of the western islands of Scotland. It is said to be a primitive limestone but is not mentioned in Mr. Thirwan's Geological Essays. It has all the common characters of himestone, with a fine Aplinting fracture. Primitive himestine is not always white nor is the grain of it always very purishtilly realy or lamellar; but approaches, by reason of its minutiness, so mearly to the compact as to pape for such : may it is sometimes said to discover a Silintery fractione, but very rarely; sometimes its teatine approach. es to the fibrous. Kiris. Geol. Efs. 215). It is admired for the white and ned, blending and softening with spots, blother, and undulating strice, more or less intornepted by bright Atthe ned stones Miching within it like little garnets, Jam. : Won says it contains little gamets: we do not find any in the

quantity of some tons which we have had the opportunity ofer-- arming), which are somewhat transparent, smooth wire: gular, and seem to be quarter I see the lower redechoursed fig: unes): also white transparent calcarcous that with the ion. mon Thombordal Pamellar fracture or occorronally mixed. with the stone; but more especially a hight or dark ohise queen substance, cother of an earthy or thing appearance. The earthy sort at first sight resembles chlorite, but is more or les shomboidal in ito fracture. It seems to be mixed with quark and is irregular as to hardrufo. This green substance is mostly very viregular as to Shape. We could only discover a small inclination to hexangular columns with voregular ends: These we sometimes Smooth and Shining and have whitish transverse stree, which give Them the appearance of an ongo: These strice are dofter than the other parts (see middle figures): some of them resemble gade, as Thaspe observed, but perhaps only outwardly. They cannot be home. · blende on around of their not being fusible. Hough it has dome. - thing the appearance. nor we they now supposed to be coveredum, Mr. Jameson in his mineralogy of Scotland, V. 2.30. des. oribus the red-coloured marble of Palephetrich as follows: Colour pale blood ned, light flesh red, and reddish white Lustre, none, except from a number of dispersed shining Transparency: transmits light freely at the edges. Hardness: Gilds smetty easily to the linite.







Tirie Marble.

Plumbum carbonatum. Carbonate of Lead.

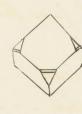
Order 1. Homogeneous. Spec. 2. Carbonate. Class 3. Metals. Gen. 13. Lead.

Spec. Char. Combined with carbonic acid. Syn. White lead ore. Ring. v. 2. 203. Jameson: Weißes bleierz. Emmert. O. 2. 388. Mine de felomb blanche. De Liste, v. 3. 380. Blomb carbonate. Hairy, v. 3. 475.

larbonate of Lead has often a great resemblance to carbo-: nate and sulphate of bangles. I hav however the adsum. tage of weight, is generally more milky in its appearance, and is mostly shorter in the crops fracture; it is also Softer. When onystallised, it is more dueptive, assuming the double fryramidal dodecacebron of quarta. It is however most readily to be scratched with a hnife, which quartz will not admit of; when carefully examined, there are very few specimens of this dort that do not inchiate a very amous tendency to forming one crystal out of many Itated ones. These plates are often so placed that it is difficult to see the modifications, especially to an unpractised obsorver. They often unitate the plated crystals of

Julphate of barytes. The present spainer is a very fine one. from the decomposition of galana, and they we here get co' foured with it. The matrix is composed of galana mixed with fluor. This ourious specimen has the first modification of the quarte - hime orystal, deduced from the frimitive thomb (see the left hand figure outline), with the column just visible: These pass into regular dedecardrons, with very short whenne, or rather octo-decaedrons; and also from the Same figure in plates, which if Eegular, show the swefaces of 12 Intersecting planes or facets: (See the right hand lower fig.) but these are seldom quite regular, I they may be so con-· fused & indeterminate that we cannot make them out: The under figure is a modification seen on the same specimen, formed by the primitive before spoken of. having a larger deposition on some of the faces than on others, which gives it a lengthened appearance. Analysis by Westrumb. Oxide of fead 81.2 Carbonic acid - ... - 16.0 Line - - - - - 0.9 Oxide of tron ---- 0.3 100.0









Dodecaidral crystallized Carbonate of Lead, formed in

Plates.

Jak. 56. 126. 2 pt 606. 5 cust no

Cals: sericea. Sutin Spar.

Jab. 56.

Class 2 Earth. Order 1. Homogeneous. Gen. 1. Sime. Spec. 2. Corbonate of Line. Div. 2. Smitative

M: Stag first made this envious mineral known in 1999. first dissoned about a mile from Alston in lumberland, washed by the Prince Tyne, near the Level of its hed, I no where else at present. The shot is about 30 yards long and 10 yards wide; The middle producing the broadest Tration, which was about 4 mikes and soon narrowing and becoming full of vains. The colour is white, with a heartiful sating tustice, showing the Strata broad in the hight and shade; and immunerable in the intermediate space, varying as they are directed to the hight, which is head if perfundiculare to them. It transmit hight at the edger, or in thin pieces. The fractive in the dire Tion of the thise is fibrous, straight histages with importabile undulations, whene the tustie, some spesimens are awwed the The Italic S, & the fracture at right angles with every wiviture. The crops fractive is nearly at right angles with the Sma, with a compact splenting dull surface. It is much of the same hand. nep with the orystallined Larbonate of Line, does not scratch with the nail is brittle & breaks most reachly in the direction of the thine. M. H. Befys jun: seems first to have des. Inibed this mineral in the Shil: Mag: vol. 12 p. 364; and accor. ding to his analysis it contains,

Carbonic acid - - - - 47.600

Lime - - - - 50.080

Tron

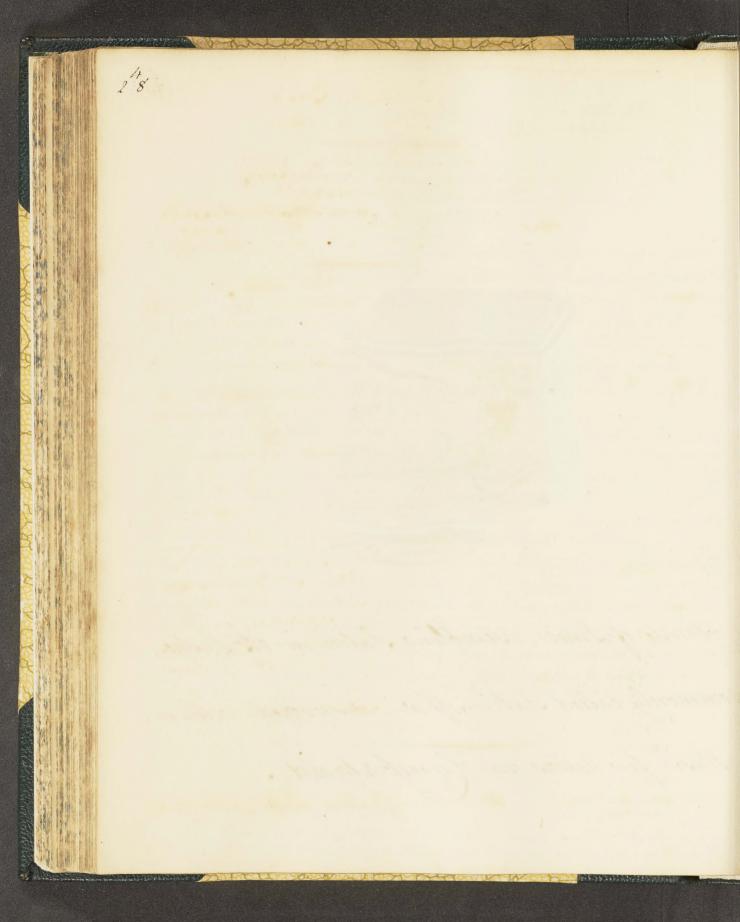
Lofo or water of crystallication - - 2.308

That here formed into Smilfboxes &c. The black the clay & hutre of the Printes give it a frutty relief; the top is an example of a septarium of some authors. The rosy blush is a dilute From Stain.





Commonly called Satin Spar, discovered within these few years in Cumberland.



to Maller State In Jah 5%. Spire Standill No. 11.28. Some carrier Class 2. Carth. Order 1. Homogeneous. Gen. 1. Lime : Spec. 2. Carbonate of Lime. Dio 2 Smitative Hong, v. 2. 168.

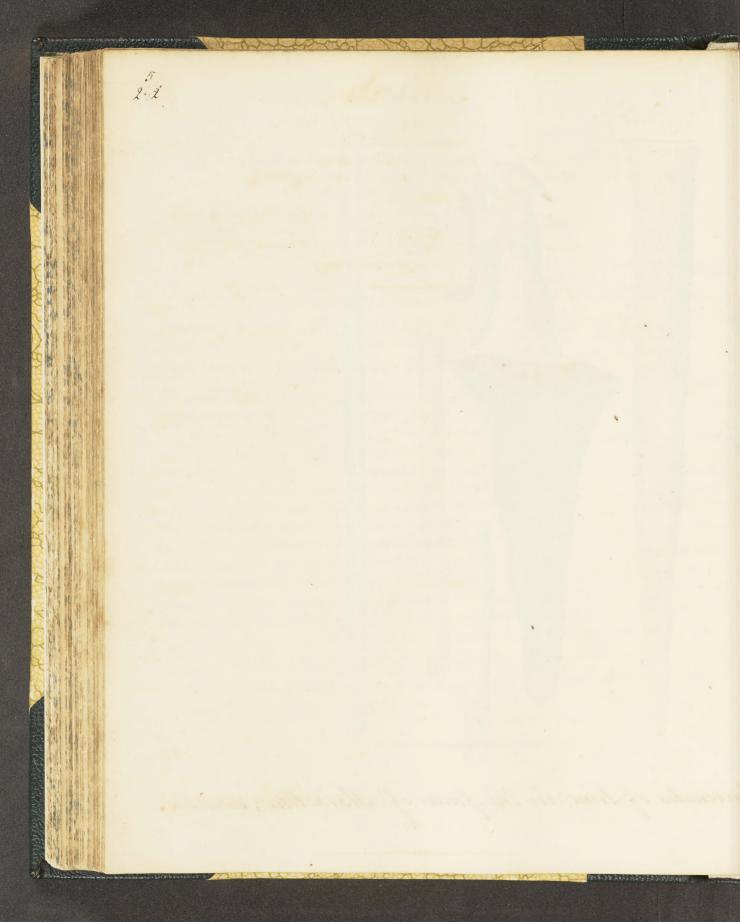
Syn. Stalactite . Rir. v.1.88. Born, v.1.298. Chaux carbonate concretionnee . Staing, v.2.168. Stalactites spatosum et Stria. Gmel. 100.

Staladites, from their nature cotramely various, are chiefly found on the roofs and sides of raverines, sometimes bring them in a very grotesque manner hanging also vary famifully in the form of inices hollow or solid. They vary in colour like other carbonates of hime and have a fruiture and sucleus to the crystallised ones.

The light hand figure is part of a solid stal " origitallised with numerous ends of the should lying together, giving an undulated afe - pravance. These are rare, I are found in a deep mine at lastleton, In Derbyshire. Upper middle figure is solid, of a whitish somewhat wasy look, allogether of the crystallised fractive, some parts showing the Solid angle of the muleus. Right hand figure cylindrical, hollow very Straight and diaphanous, its outside smooth, inside crystal. Tuid in Somewhat viregular sprintated chambre forms, this specimen came from Stonesfield guarry Oxfordshire. The brownish quill formed Mal: as the fistulose ones are called - are common. The darcher Joth , Somewhat resembling the middle one, are often found of various forms and dimentions. These dark ones may be voloured by clay. Fir. v. 1.87. The lower middle figure is mostly found of an opaque and challeng appearance in wet cellors on the roofs & walls. Lady Wilson finds them continually forming in a drain at Chartton House. They occationally own in tellars in London, &c.



Carbonates of Lime in the form of Statachites; varieties.



2 3 buter links. Jul. 58. Chath when burnt to Line contains from 5 to 10 for cent of dand or clay a Line Stone from 50 to 80 Some also loutains Magnesia which is preguchical to begatable tipe (vide Alderson on poor soils

Gen. 1. Lime. Spec. 2. Carbonate of Lime. Div. 3. Amorphous.

Syn. Chalk . Kiv. v. 77.

Craix compacte. Born, v. 1. 281.

Chaux carbonate crayeuse . Hairy, v. 2. 166.

Creta Scriptoria . Linn . Syst. Nat. v. 1. 206. Gmel. v. 3.86.

Albein clifes, famed of old , are the chalk hills of Dover, chalk abounds in many parts of Britain. There is no thath in Comwall. Shall is understood to be a precepitation of carbonate of hime halding a tittle lay and some thirty particles. It is often in very thick Thata frequenty under sand . Think in Thata are common in it. The Stratum is mostly horizontal, sometimes otherwise, as at the Tole of Wight. Many Eemains of animal exceive are found in chalk as shells, echini, worals, &c. and with the rhombic fractione. Sometimes the echimites were filled with perfect plints. Martial py Tities, or sulfure of From is not uncommon in it, either in full metaller Splinder, of in different states of decomposition papering into or hire or Cais of From. The remarkable that Mr. Thinin Jays in his geological Elongs \$ 238, metallie outstames are never found in Chalk. get in France Marked pyrites are said to be found in it as if it were not found in England. pyrites are found in Chall of Sufrea; tetween Sour & Margate, at Godo horce also in great abundance, where the Chalk in various ways paper into fine grand moiacous time offene called fine-stone, brought in abundance from Agegate. Upper figure a fump of Supra chall with a consul partine not uncommon. The little granulae of fine gravel so regularly form a bout it, seem to be a fithation of water carrying sand with it through some Loose thath which meeting with a more compact frew runs down the riker in drops, I at the same time is absorbed by the chall leaving the dand on the Awaface in little globules. Sometimes quantities of Sand fall into the Challe, and are All by the Workmen Sand Gulls. Middle figure Chall passing into dime stone, hardening with mostituting beins. Lower Tigure Chall rounted by rolling in the Sea, perforated by the Mytilus rugosus, or some species of Photas: being stained it toses the appearance of Chalk. Harder outstanner are often perforated by testacous animals.

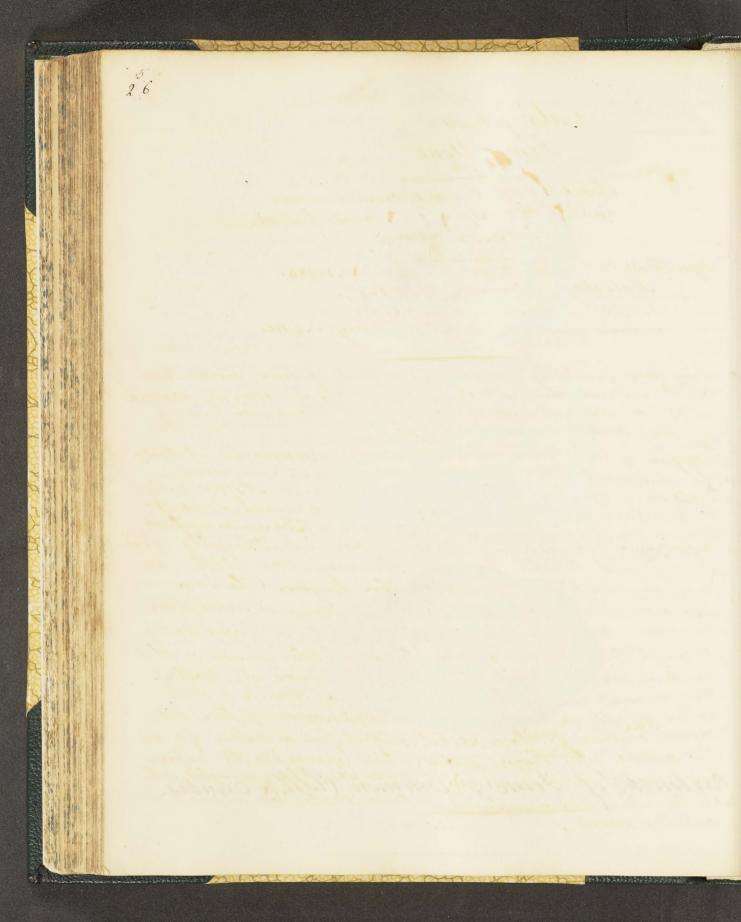
Bryum calcareum, English Botany, t. 191, should seem to indicate good chalk, as Thave found the bush where it grows.







Carbonates of Line, common Clash, warieties.



Cala petrosa. Lime Stone

Tab. 59.

Gen . Sime. Spec. 1. Homogeneous. Gen . Sime. Spec. 1. Carbonate of Lime. Div. 3. Amorphous.

Syn. Lierre à chaux commune. Born, v.1.284. Ralxstein. Emmerling, v.1.437. Compact Limestone . Hir. v.1.82. Chaux carbonatie großsière. Hairy, v.2.166.

called a marke.

Lime stone, generally speaking, is carbonate of lime, harder than whilk, often containing 10 or the per cent of clay or Iron. If so much us 15, Mi Kiswin says it should be excluded, as beauty affording good time in burning. Upper figure . Kellon-Stone, found in abundance it Hetter Ruttandshire. It is remarkable for its singular accretions in the form of Justice voe, whence it is often called. Bas stone . It is weed for building in many places : Some of the colleges at cambridge are built with it. The same uniform appearance extends to every large maper; and although a sound Strong and durable Stone in the mass, very title pieces may be crumbled to grains by the fingers. The masons use a common carpenters saw in working it: The tittle rounded particles being easily detached, it passes reachly through it. They sometimes have a little dusty or solid mucheus, coated concentrically; at other times are hollow. In the next county Northamptonshire, there is a stone called by the insons Barnock greatly resembling this, but Coarser, containing Shells, &c. Col. Walford found a stone of a sim. Har nature with larger grains (which approaches the oviform Timestone of Kriwin, v. 1.91), at Budbrooke, Efec, mingled with Thells, which has sometimes sufficient clay or argil to be

Middle figure. Bath None, frequently contains the same concrehow, but more decomposed, and a matrix surrounding them Somewhat confusedly crystallised, forming little hollows: many species of shells, enouni, &c. are found in it; sometimes however so comminuted as to be quite indistinct. I prihed up a piece of stone at Burford in Oxford shire which is of a neddish brick orfour, with the hollows very distinct giving it a volcanie or windery appearance. With diffe: cutty very small prices crumble between the fingers. Lower figure . Sortland Stone nearly like the Bath Stone: The west sort is more compact, and whiter: There are many varieties of it, passing into marly, flinty, &c. It often affords good crystals. The specimen figured had Some little rombs palf relieved on it. A crystallization called, from its revemblance, sugar candy spar is frequent among it. it appears in the form of large trunks of mees. hardest within, resembling whitish chart. Retton-Stone, colour light reddish brown, bustre o. Transparency o. Fracture earthy granular. Hardness 5 or 6. The contains go per cent. calco, and 10 of argil. The Bath and Sortland nearly the same in both most nespects but harder Spec. grav. Ketton — 2'456 Bath — 2'494 Kir. v.1.88. Bortland — 2'461)





Carbonates of Line viz: Hellon Stone, Bath Stone and

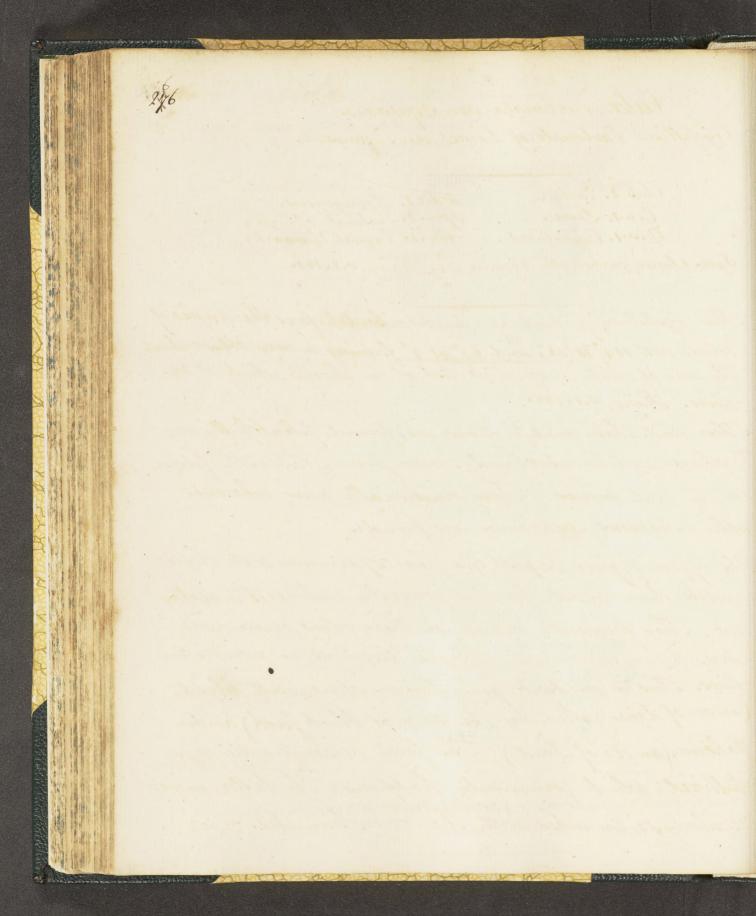
Portland Stone.

tales would journie. let be.

272 Cala coralliformis. Coral-form Carbonate of Lime. Jab. 60. Class 2. Canthe. Order 1. Homogeneous. Gen. I Lime . Spec. 2 . Carbohate of Lime. Dio. 2. Imitative Ellis corallines, p.76. tab. 27. c. These curious chalky accretions are found plentefully in the loose marke at S. Maws, Cornwall, which abounds also with shells of various species, and is brought to Truro to be sent to different places for manure. in Wales they are found. Their resemblance to corals has caused them to be mistaken for such; but on a careful examination, they are found to be only aggregations of calcareous earth, accumulated upon little nuclei, ramifying in the soft marle, and occasionally attracting other calcareous particles, which form fresh coals like the bark of a Free, and are not unlike the coats on the nuclei of the Rellow stone lengthened out, as the broken ends planly show. They vary extreme · by in their forms, and when large are sometimes perforated on the outside, apparently by some marine insects; which has caused some. to think of of animal construction. Nature wer alloting certains bounds to every species of her productions, permits them to separate from one another in many nice and curious ways. Thus calcarious earth in this instance is separating from the day in the form of opaque. branching corald. The small specimens are very much branched, and mostly white, but somewhat softer to the touch. The larger are often con loured with iron, perhaps some animal substance, as the place in which they are found contains many dead shells. Sometimes They contain some salt, which is readily hereseved by the taste, and remains after daying in the cabinet : tome have no saline taste



Carbonate of Line, Coralliform Varieties.



2 27

Tab. 61. Cala varbonata var acquiasis. Crystallized Carbonate of Lime, var equiaxed.

Gen. 1. Lime. Order 1. Homogeneus.
Gen. 1. Lime. Spec. 2. Larbonate of Lime.
Div. 1. Grystallized. Var. 1. Grystal Equiaxed.
Syn. Chaux carbonate Equiaxe. 1. Hany, v. 2. 132.

This crystal is formed of six thomboidal faces the angles of which are 114° 18'56", and 65° 41' 4", forming a very obtuse thomb, the axis of which is equal to that of the thomb which it en=-closes. Hairy, v.1.188.

These and their modifications are found plentifully in Durham and lumber land. Some from Veweasth found in the load mines. They occasionally occur wherever other calcareous substances are found.

The affer figure is part of a fine specimen with cleares crystals than usual, for they generally incline to a milky me. They frequently stand on their edges, or are as it were thrown about in different directions, on various mandines. This is on dark gray Lime - stone; with blend, (an one of Line salled by the miners black fack) and galana. (an one of Lead) The first is confusedly crystallized, which commonly happens; the latter more regularly so, in cubes with the corners truncated, or a

into-octaedron, as Hairy rightly terms it. The lower figure has maller orystale, roughish Towards the edges, as if not quite finished. The roughness proceeds from The edges of the molecule, or from spaces where there seems something wanted to finish the faces and make the dur-- Jaces even. The crystals are somewhat striated towards the centre, and are loosely fixed among light purple of mor and galana.





Carbonate of Lime, in flattish Phomboidal Barallelopipeds, scattered in different directions, with Blende & Galana. 20.

217 Settille oxygenialion, vac. radialum. Genis From The British of Some Syn. Lat Hamdele. Fine: 2 165. Acoustit . Naing a. 4. 100. " From, U. S. 887, XI. F. c. b. L.

Ferrum oxygenization, var. radiatum. Jab.62. Radiated Vaide of Fron, or Stæmatites. Class 3. Metals. Ord. 1. Homogeneous. Gen. 7. Fron. Spec. 3. Oxide of Fron. Div. 2. Imitative. Syn. Red Hamdite. Kin. v. 2. 168. Rother Glafs-kopt. Emmerl. v. 2. 313. Hematite. Hairy, v.4. 105. De Bom, v. 2.287, XI, F. c.b.1. The Homatite From over are found near Silverstein in Lancastre in great plenty. The upper specimen is singular from the separating & divaricating radio. The lower figure shows more of the usual structure of these ones, which often form large Townshish or viregular nodules, sometimes kidney-Shaped, bobroidal, &c. The makes rachating from one or more centres, 6 inches or more in length, & casting or coating one over the other. They are mostly of a Mrich red colour easily staining the fingers, particularly the powdery parts: - The harder parts also stain The fingers much, and by a little Embling give a black tinge with a bright histre time black lead. Those parts which have lost the red appearance, and approach the metallic or Iron do not so readily slain the fingers on being ground these give a dark red colour; whence this one has been called blood- Stone. Sometimes the harder black sort with this property has been ent ento burnishers for gilders. These ones are said to contain from 40 to 80 per cent. of From. The harder haid is sometimes a little mag. = neti , if reduced to powder, particularly if heated on chardeal; which deprives it of a certain degree of of oxygen. " Fracture coarse or films, parellel or dwinging, earthy." may be scraped with a horizo or stroke fine paretiel or awerging, earning.

with & steel. Spee Grav. from 4 to 5, Hir. "This one contains besides some man.

with & steel. Spee Grav. from 4 to 5, Hir. "This one contains besides some man.

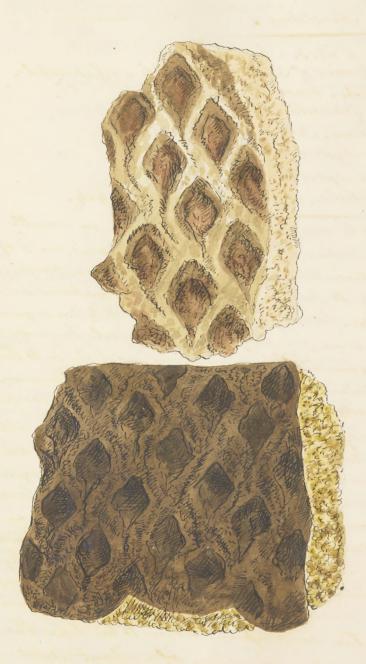
with & steel which makes the Tron it affords Red whoch that is, brittle when wire kir.





Red Flamatites From Ore.

Class. 63.



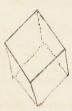
Coarse Sand Stones.

Jab. 64. Tiles quartrum primitivum. Primitive crystallized Quarti. Class 2. Earths. Ord. 1. Homogeneous. Gen. 6. Silea. Spec. 1. Quartz. Div. 1. Gystallized . Var. 1. Primitive. Gen. Thar. Bough and hard to the touch. Soluble in the two fixed alkalis; but in no acid but the fluor. · ic, except (as some think) when in combination with an alkali, much deluted with water; also soluble in 1000 times the weight of water. Spec. (har. Nearly uncombined. Burns to an opaque white. Spee grav. 2.64 to 2.6%. Rir. Syn. Quarta. Riv. 1. 242. Hairy says that The primitive orystal of Quarte is The Shightly oblive showl, measuring 90 40' and 85°56. He does not seem to have met with a specimen. Towerbys is formed in a variegated flint, from Lewish. ham in Kent, Showing only one end of the shomb, agrees with this description, as the primitive: some of them show signs of the other three faces, approach. ing the double hexaedral pyramids. see left hand Jujure. Selica when transfearent and crystallized. is rommonly called Quarta, Book Crystal, or Mountain Crystal; the purest are generally colourless, and often very brilliant. They were formerly much esteemed,

280 and known by the Jewellers under the name of Kock Crystals, and Stotch, Welch, or Cornish Diamonds; nor do Jewellers seem to distinguish between Rock Crystal and Quarte, although they chiefly use Bock buystal. It is cometimes found yellowish, or of a topax colour, pape. ing to red, purplish, brown, black, &c. It's histre is glassy; it is more or less transparent, and is said by most authors to have a double refraction: Towerly could not discover this wind lance. The fracture is loarse, splintery, conchoidal, or undulating, the flaws frequently videscent. Hardness 10. How. brittle, whihes fore with steel, and wratches glass. This The chief inquedient in making glass, when fused with potash, soda, &c. and seems to be only a pures brind of flist. Diamond has generally been classed as the first There of Silia, but it how at length been discovered to be the purest species of Carbon. Quarta seems to be very properly to be distinguished from Brock Engstal by Kir. The former if exposed to a strong heart becomes of an opaque. white: This specimen is therefore truly quarts, as a fragment has been proved, which being exposed to a strong heat in a common for became first of an opaque white, andby a longer exposure domewhat opaline, or rather like chala. dony; not unlike rommon this under similar cirium. - Staines. Book brystal on the contrary, originally dark brown, &c. by the same heat became beautifully trans-- parent, as some lapidaries and jewellers well know.







Brimitive Rhomboidal Quartz, with geometrical figures showing its passing into the Dochecaechon with triangular faces.

283 thef & South of the test of hime of hime.

Jab. 65

(alx carbonala, var. metastatica. Carbonate of Lime, var. metastatic.

Class 2. Earth: Order 1. Homogeneous. Gon. 1. Lime. Spec. 1. Carbonate of Lime. Div. 1. Crystallized. Var. Crystal metastatic.

This specimen shows a variety of faces depending on certain laws of increase and decrease, and seems more regularly forming the metastatic within, where it abounds with pyrites, then esternally. This serves to show that crystallination may continue while one substance has another within the. The pyrites from their whom , as well as form, should seem to hold copper as well as from.



Amore confused by the Same of a greenish cast, including Lyntes of silvery and golden Lustres, &c. sec p.

Jab. 66. 28% luprum arseniatum. Asseniate of Copper. Class 3. Metats. Ord. 1. Homogeneous. Gen. 4. Copper. Spac. 9. Sesemiate of Copper. Var. Crystal an hexaudrah plate with milined edge. Syn. Cuivre arseniate famelleforme. Stany, v. 3. p. 5/8. Arseniate of copper in hexaedral farmina, with in-Chined sides. Phil Draws. 1801, p. 176. This beautiful variety is described by bount Boumon in

This leautiful sweety so described by lount Moumon in the Phil . Trans. for 1801, according to him " It is in very thim heracidral farmina, the sic sides alternating in an inchi. need position, with the broad hexacidral planes on either side at an angle of about 135°, and the third at 115°, on the opposite side." See fig. 1. The instals are more or less piled on each other, and are often to be devided, or split parallel to their surfaces, in the same manner as Mica. They are very brittle, mostly of an emerald green, and as transparent as the best glass, their history were the first glass, their history to the same the best glass, their history to the same the best glass, the bout to sembling the thin glass called frosting; or, as the bout town I says, the history of those coloured metal plates called found says, the history of those coloured metal plates called from the hight falls on the broad planes.

The edges are more opaque, harly from the contrary direction of the orgotal, and partly from the strice in the dinichion of the famina. Fig. 2. is a general group of crystals. This. 3. shows a variety in Sowerley's propertion of a yellower think (These two are somewhat magnified) The Tower geometrical prairies, show according to the measurement of the Count, that if the inclined dides were to be unineased by a regular Jet of decreasing plates placed whom the sweface till they formed an equilateral mangle, they would become oblique retailerons, (see the right hand figure;) and if they further continued on These planes till they were fast, they would produce a rhomboidal frism, which, as it seems to agree with The fragments, may be the frimitive form. It ofthe who famina on the broad planes, and also readily does To with the side facility. Its fracture is sometimes in regularly conchoidal and glassy. Shee grav. 2,548. M. Chenevia found it to contain oxide of coffee 58, wisen.

in acid 21, water 21.



Arseniate of Copper in hexaedral Plates, &c.

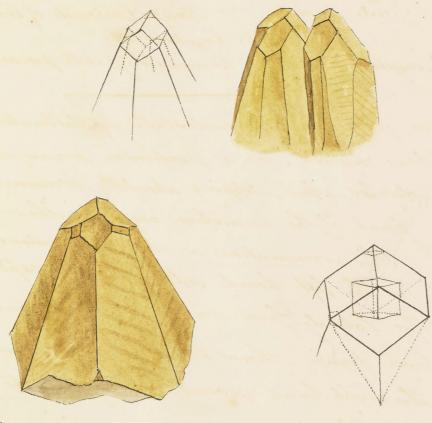
1-37

Gow. 1. Lime. Spec. 2. Combonate of lime.

Div. 1. Crystallized

Var. crystal metastatic tourninating with primetive facets.

upper figures. The motostatic crystallenation, is formed as before observed, by a particular arrangement of the motocules, which, stopping abruftly, terminate in the obtase fromt of the primitive crystal, showing three obtase fromt of the primitive crystal, showing three laws. This termination is not very common: the laws. This termination is not very common: the outline on the left hand will help to explain it. outline on the left hand will help to explain it. The other fasteral faces we spoken of on another filmer. The fower figure shows the equiaxe termination, and the right hand geometrical figure, its formation and the right hand geometrical figure, its formation when the showle.



Fragments of Dog's-tooth Spar; the upper figure with the Afrea Primitive-formed; the lower figure with the Aguaxe Termination.

Jab. 68.

Suprum oxygenizatum, van. oxtaedrum.

Crystallized Red oxide of Copper.

Crystal Octaedral.

Class 3. Metals Ord. 1. Homogeneous. Gen. 4. Copper: Spec. 3. Oxide of Copper.

Spec. Char. Copper combined with acygen.

Syn. Ked calciform copper ore. Kinw. 2.135.

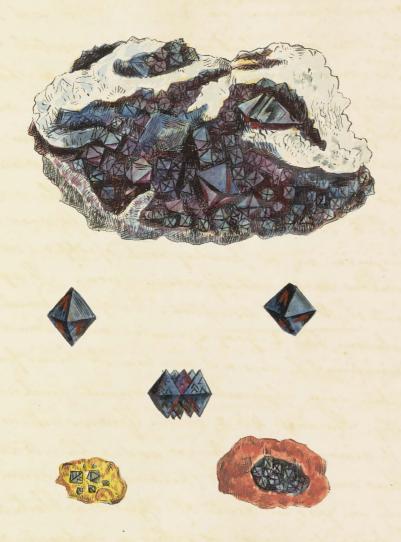
Native oxide of copper. Bab. 174.

Roth - Kupfererez. Emmerl. 2. 213.

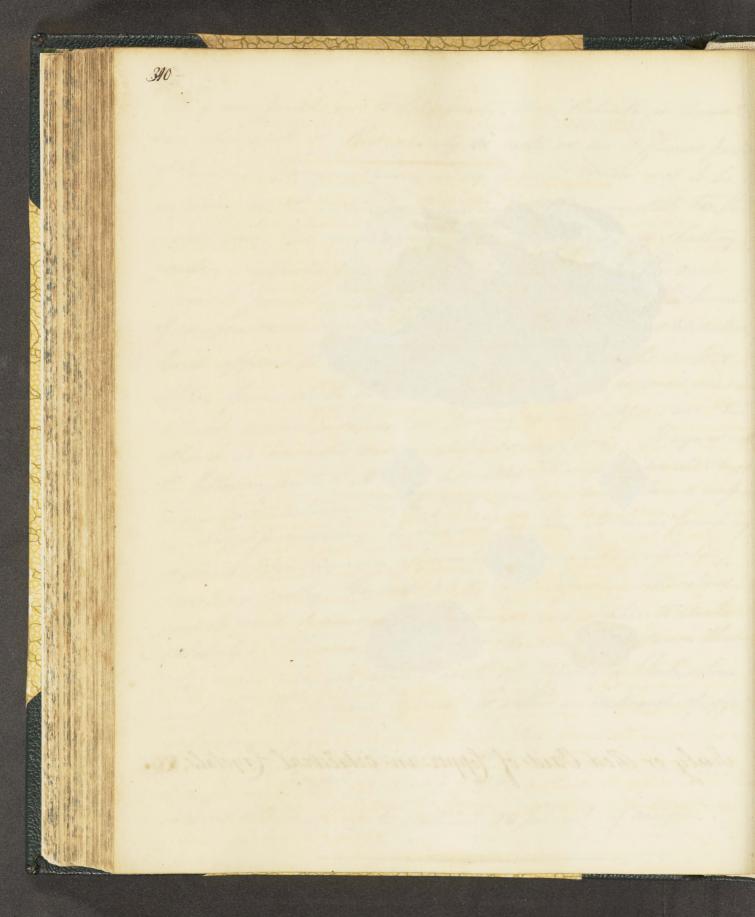
Cuivre oxydé rouge primitif. Hairy 3. 557.

Jone of the verystallized sed oxides of copper deserve from
their lastre the appellation of Ruby Colifers more than
others, which are shown in another past. The finesent fine
therinen has more of the stock like lastre, as most
of the oxfaithours have: however, the beautiful red sparkles internally with much brilliancy. It is not difficult
to sirape with a hinge, and the least scratch produces
a rich ned powder of the colour of the gum called Dragen;
Blood (known in the Pharmacopaia by the name of Sanguis
Oraconis, and extracaled from lafarners hothing of Linnaus)
The Specimen; look red most by candle light.

They are found in Wheat Amily, near Reduth, in Cormoull, I'm other parts of that county, as well as in different parts of Europe, Horeign specimens in general seem not to be Insperior in the some or herfection of their crystals to the Comish ones. The matrix of the upper figure is shatting quarte, supporting native copper, from which the oxide seems to proceed. It is worthy of nemark, that this hind of oxygenizement should form so regular a crystallisation, for it appears to be only a decomposition of the native where from which it commences. The lower figures are in different matries, - one in red frowdery vaide of copper & iron; the other in an ochracious matrix, chiffy oxide of iron. It agrees with the following parts of Mikini. description: "It is often cochineal red, or intermediate between blisch-gray & comine ned. Found mapinis, investing, differenting: "he does not mention its being found eng. Stallized. "Frantine even, approaching the minute conchoidal, Sometimes earthy. Hardness 4 to 5, brittle. Efervences with nitrons and to which it gives a green tringe, and a blue to caushe volascali! Thus much till Mr. Therevia had shown that There was only one proper oxide of copper of a black colour, and that the present species is rather a subscide of lopper, containing Copper 88.5 Oxygen - - - - - 11:5 Whereas the black oxcide contains 20 per cent of oxygen.



Ruby or Red Oxid of Copper in octaëdral Crystals. &c.



301 Tuh bo

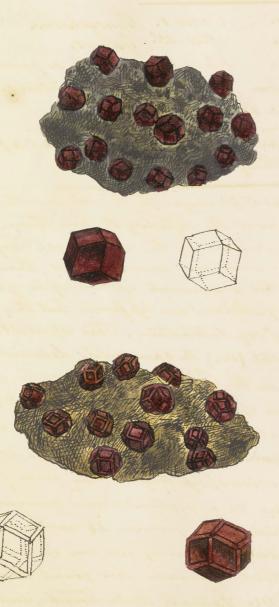
Tab. 69

(lass 2. Earths. Order 1. Somogeneous. Gen. 6. Silex. Spec. 13. Garnet. Div. 1. Crystallized. Van. 1. Dodecaëdral, or primitive.

Spec. (har. Primitive form, the thomboidal doderaedron; scratches quart.

Syn. Garnet. Kins. 1. 258. Granat. Emmert. 1. 43, 23.246. Borase granatus. 1.43 Linn. Syst. ed. 13. V. 4 p. 96. Gnonat. Hairy, 2. 540.

Garnets are of various degrees of hardness. The oriental and Bohemian are the brightest I hardest, but all want the Papidary to thin them, I show their his - The, The British are not valued by the Sapidaines. They are chifty found inclosed in micaceous and granite rocks, though cometimes otherwise. Besides the other sugredients spoken of in garnets the Bin tich often hold partiles of Mice, I are lep firm. but they present most of the different forms of onystallination. This representation is what is called the framitive crystal (vix) the & homboidal dodecaidron. These are found in great plenty in the Phornt- pudding rocks, at Shortly in Scotland. We have bought specimens at sales said to come from Bohemia of the same dort, I in the same gangue as those from Shortly. The Sprian garnet is more scarlet. Though some of the Scotch are nearly of the same colour, lip bright. The lower figures are from rochs near the same place in a lighter-coloured ganque (a granate), with the edges of the doderacdron forming 24 narrow hexaectral facts; in addition to the 12 Thombordal. Sowerby has one in a basaltic stone, I Green horne from Scotland. Jameson has found them in miace. our Schutter, v. 1.219. V. 2. 212. For tornal lustre tasced, internal 2.3.1. of the brownish and blackish frequently o. Thirw. Frantine of the hand ones somewhat flity or conchoidal. M. Kinw. calls the oriental garnets carbuncles, p. 258.



Garnets in their Matrix, showing the Rhomboidal Dodecaedron.

304.

15. Tab. 70.

Jab. 70. The upper specimen is nearly of a straw colour, and divirges in a stellated manner from a common centre, with a good deal of the appearance of Touchwood, Some way different shades of green, which somewhat resemble the Bypus-the carbonate of copper, see the surface of the lower figure, where there are also the various whom from than to dark brown, some of which. appear of the colour darhish brown rotten wood, a little resembling the wood In One of Commall, but May be Ecadily known from it from being not so Theavy. This appearance occasioned the common dinomination of Wood lopper, before Court Bourners paper was published.

humathifun Aramide of Oper of the

extern of rother and firming dellated

matei, ac.





touther form Asseniate of Copper of the texture of rotten wood, forming stellated radii, &c.

Jab. 71. The lower figures in this plate we of the finest teature: the particles in the right hand figure are so fine as scarely to be discurred without a magnifying glass: The fracture which is a little shattery as well as earthy, in some parts readily shows the Sand- like teature, It is more strongly comented In other parts by means of a very little line, and more. strongly still by a silieous cement. The original of The impression we do not at present himow. The partiles in the left hand figure we somewhat larger, but are more compathy agglutinated by the viliceous cement, and seem as if more or less fixed with each other somewhat approaching the vitreous appearance.

The impression seems to belong to some vegetable soften south from some the order where the subsibly furnished with offices in the order where the fittle ovate hinobe appear, (one figure is marked as if with the impression of Bamboo stalk) The upper from with the impression of Bamboo stalk) The upper from the long squame is what is called by therwan fermer the long squame is what is coloured with an oxide of ginous Sandstone. It is coloured with an oxide of ginous Sandstone, It is coloured with an oxide of oxygenia aking how which seems to be in that stale of oxygenia aking on the outside, which has the conglutinating from on the outside, which has the conglutinating from on the outside. Man on the misside.

Note to infact on the out side. Than on the misside.

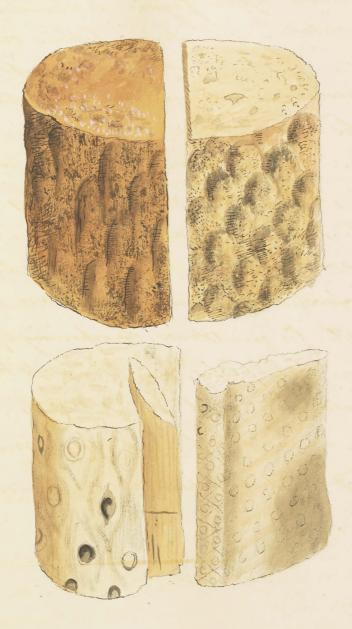
Note to super to held together in this manner are seen to stone the south of the peters in this manner are seen your common in gravely places about London.

many the second of the second

The hight hand upper figure is a course stone of a Similar nature, with Some pebbles occasionally here and there about it; also some lumps of a chally appearance resembling decomposing fellspar, Thus It is perhaps near in order to the Paulble Stone of Thinw. v. 1. 366. Sandstones are found in many parts of England, and are of great rive. They are natural felters in The Saboratory of nature, and we now become a modern branch of traffic in Derbyshire, London, and other places, for fettering water. They are brought from Newcastle for grindstones, Sharpening of seythes, Subbing down copperplates, &c. Some sorts have been wed for buildings, as at Windows Castle, which is Chifly of the whiter hand and fine grained. The gray and black blotches are caplained in an --other place.

favind Tand Janes

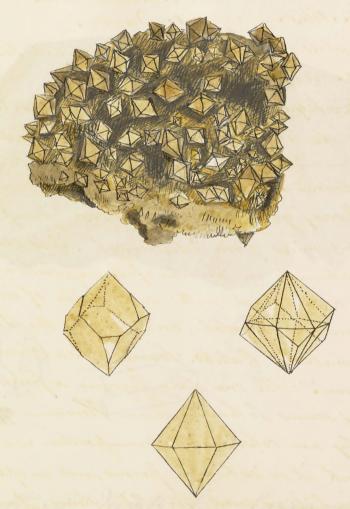
ining mines somethy by portell we income



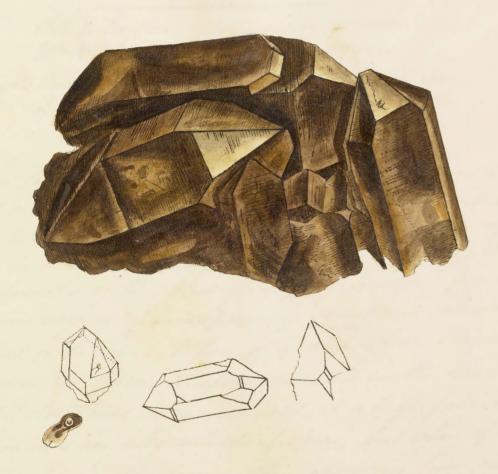
Various Sand Stones

1-40

315 1110. 12. Englational dodowitant Quarter. this 2. Farther letter to Remogenionis Ganto Mar Sparte Daiste. Quarte healin water with the thing late 40. 5.1.



Dodecaedral Quarte, with geometrical figures
showing its passing into the Dodecaedran with
triangular faces.



Crystallized Quarte from Carin-gorum, Aberdeenshire?

Siles Quarteum orgstallisatum. Grystallised Quarte; Cairn Gorum Orgstals.

> Class 2. Earths. Order 1. Homogeneous. Gen. 4. Silex. Spec. 1. Quartaum.

Syn. Quartz hyalin plagiedre. Hairy, v. 2. 413. Quartz hyalin rhombifere. Hairy, v. 2. 413.

Cuin Goum brystals have been known for some years, and are said to have first caused the Papidaria to settle in Morden, where they have been constantly employed in outling them for seals, ring-stones, &c. They are perhaps of the oldest formation, and are found of various degrees of transparency, sometimes coloured gellow or brown. When of a deep colour they are as. = teimed as topares, (Topares are found in the Brazilo, &c) and if clear and large are sold at a high price. The brown ones are also valued if clear; but when of a bad. Jellow or muddy brown, the Papidaries have recourse to their aut, and prove them to be rock Crystals, by dissipating their wolour, and giving them a transparent histore. This openimen is removehable for the face s of Hairy (ie.) The little narrow face in the middle of the right - hand outline, which is often more regularly

Thomboidal , being a truncation of the solid agle of the base of the payramid; and the oblique face on the column, which is just below it, on the same outline, corresponding with the faces on the appear Figure, to as to make them more distinct. This father is on the Right hand of the solumn in most of the crystals on this group, and has not been before noticed. The next outline of a whole Crystal lying on its column (from lain Gomm) has This face on the column of the other side, and a face on the edge of the pyramid and column, m of Hairy; Which is somewhat rare. The left hand outline has a title hollow in one corner, enclosing some higherd. The next figure shows the water, as it is commonly called; shightly magnified; which is mostly known by a little bladder of air moving as the brystal is moved. There is Something that floats in the higher and looks The soot, or raide of carbon. Crystale containing water or some liquid are dold at a high finie. Towerby does not know that any Substance has hein observed floating in the Liquid within any crystal before. The above group is in the coller - Tion of G. Laing, isg! of Edinburgh. The others in Sowerbys cabinet.

Cuprum arseniatum, var. amiantherformis. Amianthiform Arseniate of Copper.

Class. Metals. Order 1. Homogeneous.

Jen. 4. Copper. Spec. Arsenhate of Copper?

Dio. 2. Imitative. Var. 2. Amianthiform.

Spec. Chur. Copper combined with arsenic acid.

Syn. Amianthiform arseniate of Copper. Bournon,

Dhil. Trans. 1801. p. 180.

N. 2. 4th species, &c. Chenevia, Bhil. Trans. 1801, p. 199.

This species of lopper appears first to how been described by lount Bowmon. The present variety is a curious example, and seems so well described by the above author, " This variety is composed of fibres as delications Those of amianthis, of the flexibility of which they frequent. by propers a certain galegnee". In the mesont openimen They Essemble the finist plaments of silk. It serves to I how a variety in solour not mentioned by count Bour -non, viz. the purple here, which more or less covers the Infaces or the fromts of the fleaible Threads. The other parts are of a highlish show yellow. Its resemblance to a raceme of currants or a bunch of Grapes made Towerby think that each bundle was composed of fibres formed from its centre (as some of the smaller are): But on opining some of them he found an Ochra-"Gons gravelly substance in the middle, from which

They diverged more or less regularly, often more clease and hard inwardly than outwardly. The more regular ones are som. monly more white and satisfy than the others, excepting towards the tips, and are more of the teature of rotten wood. The outsides are very tender and easily bruind. According to the analysis of Mr. Chenevia, this species contains

Hairy mentione capillary arrowide of copper, v. 3. p. 578.

and observes "that foreign mineralogists have found diff.

ment regular forms of arsoniate of copper, which from

certain corrums tances he has not yet been able to deter
mine." The fower magnified figure shows some of

the fibres or felaments of both sotts here mentioned,

some of which are collapsing at their points as if they

lad been wetted, forming various returbations and in
dentations of a purplish hue, apparently retaining that

colour from being left exposed to rubbing or any other

accident. This was found in Study Gostand mine

in Comwall, from whence most of the other arson
- pates of copper come.





Silhy amianthiform Asseniate of Copper of
a bothyoidal appearance.

3,06

THE RESIDENCE OF THE PARTY OF T

Sandstone.

Class 2. Earths. Order 1. Homogeneous. Gen. 4. Silex. Spec. 1. Quarts. Dio. 3. Amosphous. Var. 2. Graniform. Syn. Furruginous Sandstories. Kiv. v. 1. p. 365. Cos colorata. Linn. Syst. Nat. ed. 13. v. 3. p. 64.

Sandstones are not uncommonly imprefsed with the easts of shells, &c. They are little less than granula of flint, with son more or less oxidated: The oxidation is most conspicuous in the crevies where the shell has been mixed with a little hime, or other things, groing Them different links. The shapes of many sorts of Thells one found in these Stones, mostly Areas and Anomias. The assimuted sides of the Area on the stone at the right hand Seem accidentially formed, from the peculiar manner of its immersion in the maps. They are often found detached as figured, and serve to undeceive m. These Aria, as They surely are by the length of the hinge, apparently Contain many denticulations or teeth, the distinguishing character of the genus. The singular rising in the middle of the upper shell, of about 5 pleats wide; and the cornex ponding cavity in the under one, is a avious character, common, with some variations, to both

These and the Amor Anomia, with which they have generally been confounded. The little Anomice at the bottom are dark. er, and probably contain more from. Their structure is cortainly remarkable, especially as we, in the, in the present age, have no recent shells in this part of the world resem. · bling them . This ofpersonen came from the Tees in large fascicili. They crumble but tittle in the fracture, rather condensed, and approaching to the conchoidal, The flist: often very tough, but too heavy for building, and not of any known artility at finesent: they pernaps might be hable to decay as the orbraceous sub-Stance is somewhat scattered through them. They sometimes contain more or less clay.



Ochraceous Shelly Sandstone.

Sulphate of Fron.

Class 3. Metals. Ord. 1. Homogeneous. Gen. 7. Iron. Spec. 6. Suspitate of Iron.

Div. 1. Crystallized.

Spec. Chav. Supphire acid combined with iron.

Syn. Vitrol martial. De Liste, v. 1. 331.

Supphate de fer. De Born, v.2.39.

Vitriol vert. Daubenton, 28.

Variol of iron. Timw. v. 2.20.

Ther sulfate. Hairy, v.4.122.

Vitriofum martis. Linn. Syst. ed. 12. V. 3. 104.

Green vitriol, as it is commonly called, is found crystall. Used, Statachtical, or in amorphous himps, in many parts of great Biritain. This came from Hawkshead coal mine, near Glasgow. The mine had been worked for above 200 years, from the crop to the dip (as the collies term it), that is following the descent from whom I appeared on the Swiface, always working at the lowest part. Thus the upper parts, or pits first worked fowest part. Thus the upper parts, or pits first worked were help as were left ear food to the external air above the coal Stratum. The black clay or aluminous one, being the cieling of the mine, absorbed the varyour in the sommon air by

means of the sulphime of iron, (which is almost infer -"ceptibly maxed with it,) in such abundance as to expand It, first in the form of white sithy threads, mearly separating the famina in a somewhat undulating form, hinh afterwands expanding it in such a manner, that the whole Thatum, which was but 14 miches, sometimes be. came a gard in thickness falling to the floor; and the Ameads, from being scarely purchtable, become near an inch long, wirling in many famiful the · Ecchons Shown in another place) It sometimes is pens or consolidates wito what the workmen call natrue copperas, I may rafiely hald a little copper. It is somewhat orgotallised, like the green part figured Whon the day or aliemine, which is in the act of throw. ing out little white apaque round spots, the effect of a further change since The Specimen was in Sowerby's popelion. These probably contain les water than the other parts. - As transparency is 2 or 3. Kinw. This is a very good alum one, the supplume and and the argil being by proper means separated, and recombined to form that doubotance.



Native Viduol, or Sulphate of Fron.

33.5 Jub. 77. The temporal Colit Homogenia in geregners dieste Saine Coffice. and a special the said the said was all fitting frames

Cuprium nationm; var. arborescens.

Jab. 77.

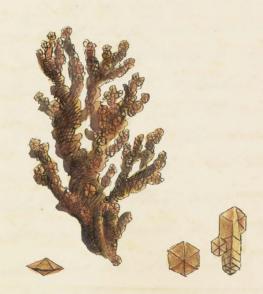
Gen. 7. Copper. Show. 1. Native Copper.

Div. 1. Gustallized.

Syn. Thow. v. 2. 128. Harry, v. 3.521.

Arborescent Copper differs from the dendritical, (which brances Chifly from its sides, I is mostly comprehed, in branking ma. - my ways without comfriels son, I generally more purfect in crystall. Kation, as it is formed among loose fragments of quarks. The Crystals are 12 sidel, 2 dometimes without a lens may be seen; at others many are accumulated and attached to each other in different dnithens forming the appearance of a rough stem & leaves. They after widen and form mailes. The colour and lustre vary from light & bright gellowish ned to bright brown - ned. The lower Jequie came from Touro. The apper figure to rather be Tween dendatical & arborescent copper, but the definition is of no real consequence. The ongotallisations are less perfect, and are made still lep so by the green oxide covering the Impu and giving it a more regetable appearance, except that its colour is too gay for any regetable we know. It comes from Heal Jewel in Cornwall.





1-25

Arborescent Copper, crystallized in Dodecaedrons.

Class 2. Larth. Ord. 1. Homogeneous.
Gen. 1. Lirne. Spec. 4. Thate of Lime!

Div. 1. Cinstallined.

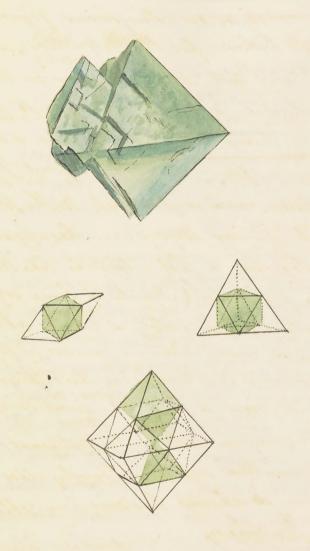
Syn. Rashleigh, 1. tab. 24. f. 2.

The apper figure here represented sooms very nearly allied to The green flow in the hornstone before mentioned. This much have hien a very fine specimen, it was eligantly formed among long Columns of quartz, and came from the Pell mine, It Agnes Com. -wall. It is rove, It has no anothic, and offear to have been Joined to a farger make of its own substance, the fragments of which remain with it, and come to show that the ruder harts have a tending to the octaedral figure. A nemarkable surrimetare belonging to this and the green part of the fluor. from Beer Alston, is; that on the hot poher it gives a blue queen glow nearly who itself, but highler from ito bright ness and somewhat more blue, very nearly resembling the Chlorophane of Sheria mentioned in another place. The lower representations are designed to show the nature of the orystallisation, which at first appears as if it had a rectangular ortaidrow for the primitive and integrant motebule: but on examing the fractime carefully, we find signs of many forms. and our produce fragments truly tetraidral and shomboidal;

340 the former of which asists to form the octaedral; and (vice was) one actachon with four tetractions forms a tetraction placed as in The right hand figure. An octaedron requires 6 ortaedrons and 8 tetracidrons to form it as in the Towest figure. The shoul, which might he taken for the primitive, is compo sed of one octaethon and two tetractions as in the left hand figure. An octaedron is tinted in each to make it more apparent and the towest figure has also a tetracidion coloured. The fracture in fluor is very distinct from that of carbonate of time, and is parallel to the faces of The ortaectron, each plate having always one hesangular face, Sometimes 2, forming together a flat octaction, like the bottom half of the lost hand figure in ("Thate of Lime orystalling in Octaichous, coaled with opaque whole & Green atternating O'erhaps theor fractures with more natural varieties of figures than any other numeral substaine. However, as the octacition is always to be found in it, and is included most simply in The Atraccion, the latter may be called the integrant molecule and the former the primitive orgetal. Sowerby does not hmow that the tetraction or should has ever been obtained. eaugh by means of fracture. application, which is fine appears returned for the formation and integrant instead but in

ecaning the fourtiers conspelly, in find depos of many from

and fair produce fragments findy littleded and thousand



Green Octreedral Muor, with outlines of the various Natural Fragments.

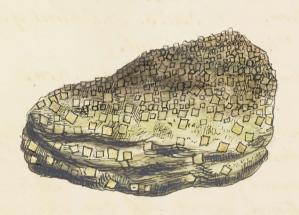
1343 herum sulphurum. Sinb. 19. Pater 1. Hon aportered. Piet. Trevletterd. Spec. Char, Sulpher somer post soil from. ak come from Lines in our Sugara when nd have before is with the contain them of offerent where will a state in from a spire das and tention in openal on of the court his the parament is on the wore chather house it is the government and have once thinke of coffee. The force James of a frice of andulated cotherine common alie) date, which is a deveable I if free from parity, we The common air decome poor to prite, decays the live, and the take land cotton. This will has further explained when breaking The last that of Haled Westerne land Hall's Vonda .00

Internent sulphureum. Jab.79. Internet of Iron. Syrites.

Class 3. Metals. Order 1. Homogeneous. Gen. J. Fron. Spec. 5. Inspheret of Iron. Div. 1. Crystallized.

Spec. Char. Sulphur combined with From.

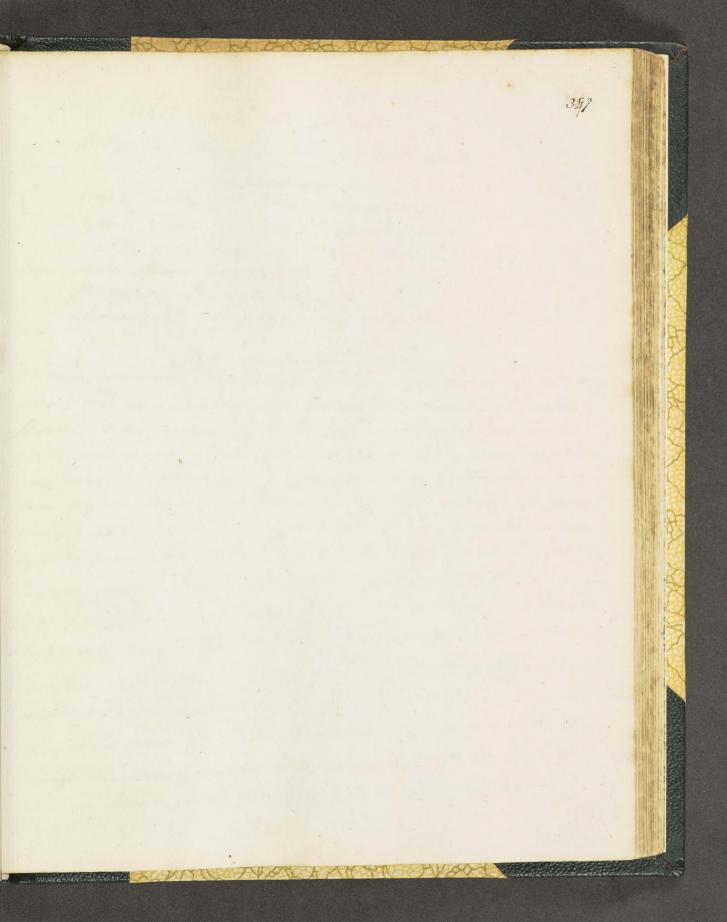
These crystals came from Barys Mine, Anglesea, when there is great abundance in some places, heaped together like grains of sand, so small that their fastre is fostin their minuteness, much less can the cubic form be Jeen without a magnifying glass. The rocks of hime Stone, and Those passing to regular State, contain them of different sines. The Upper Jagion is from a spe-Einen the gangue of which is between common time · Stone and State, and contains no small quantity of the crystals. The gangue is in the more chally parts Stained a title green perhaps from some Oxide of copper. The lower figure is a piece of undulated (otherwise common blue) state, which is a durable Nort if free from parities, as the common air decom. poses the pyrites, decays the sion, and the state becomes Totten. This will be further explained when breating of the best state of Wales, Westmoreland, yorks' Comwall,





1-30

Sulphwest of Fron, or Irion Syrites in an an andulating) State, &c.



Class 2. Earths. Order 1. Homogeneous.

Gen. 1. Lime. Spec. 2. Carbonate of Line.

Syn. Swine Stone. Hirw. v. 1. 89.

Stinkstein. Emmert. v. 1. p. 487.

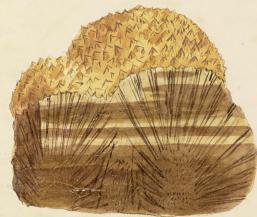
Chana carbonatee fetide. Hair, v. 2. p. 188.

We have exhibited The present Specimen of Limestone as a very winow one, an amount of its resembling a bunch of Grapes. It seems to be formed by water passing through loose marly earth, and consists of smaller or larger globbles, according to tircumstances; sometimes in bundles resembling Ketton Stone, at others much larger (see the lower figure). The globules are occasi: - onally a little hollow, and engotationed within; sometimes nearby clear, and white, when they are destitute of smell; But They are more commonly solid and brown within, having a very factil odowr, (The factid variety of Line-stone is by no means Tan), easily preceived by soraping or pounding. This smell has been ascribed to bitumen, but is of a very different nature. Vauguelin considers it as suffhurated hydrogen. The tolour goes off from the surface if exposed to the at = mosphere; which makes it newbary to surape it; the heat used in burning it to hime dipipates it mitirely.

The lower figure is very interesting, as it shows the stratification while ongladining, he darker parts making it evident. The top of this specimen is crystallized with the acute ends of the inverse thomb, pointing outwards, which is not une wonat in this build of comenting outwards, which is not une tarths. Lady When gave I owerly a previous of this stone from Sunderland. M. Winch, J. J., one from Hartlepool Inham, and it should deem by his observations that this evining stratum may extend from Hartlefool to Sunderland all along the coast, & perhaps much further.

It is called Building Hill Stone in Sunderland.





Botroidal Saine Stone, &c.

1-38

Class 1. Combustibles. Ond. 2. Mixed. Gen. 6. Carbon. Spec. 1. Bituminous.

Spec. Char. Betuminous oxide of Carbon, and oxide of Carbon; mixed. Syn. Mineral Carbon impregnated with bitumen. Kins. 2.51.

Bitumen Lithanthrax . Linn. Syst. Nat. ed. 13. t. 3. p. 111.

Steinkhole. Emmert. 1.60.

Houske. Hairy 3. 316. De Liste 2. 590.

There are many varieties of coal in different mines, and even m The same sine. The upper figure is taken from a common Newcastle specimen, from whence a great part of England & many ports of the Continent, are supplied. It is coidently composed of the sorts of Strata. The one The the nemains of charred Wood, or vaide of carbon. This has butherto escaped the notice of most authors; hisides the grain and appearance of wood, common in this and most other coals, it will be known by being the only hand of coal that will storm soil the fingers. If separated, it burns the Charred wood, leaving a similar test residuum; it is also soft and powdery, whe burned wood; breaks in a crumbling manner, and falls into small particles. O

* Linnous sicheded all wals under this title, describing them as a school over, which does not include all the specimens.

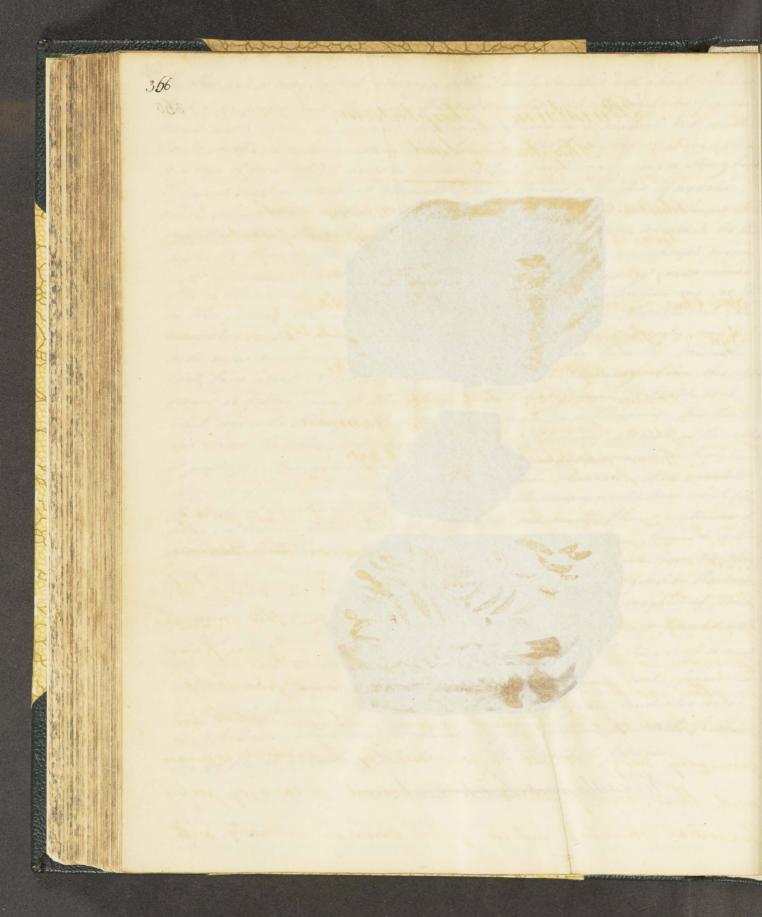
+ We have neason to believe it contains no alkali.

I M: Jameson says," This does not seem a common appearance" When he found "carbonized wood which could not be distinguished from carbonized Fir" v. 2. p. 87. It is probably the smut of M. Hirisan.



Newcastle and Scotch Coal.

1-48



Plumburn phosphatum. Jab. 81. 357 Phosphate of Lead

Class 3. Metals. O'nder 1. Homogeneous. Gen. 14. Lead. Spec. 3. Thosphate of Lead.

Div. 1. Crystallized.

Spec. Char. Combined with Phasphonic acid.

Syn. Thosphorated Lead ore. Kinw. v. 2. 20%.

Grun- blegers. Emmert. v. 2.394.

Braun - bleierz. Flid. 383.

Green Lead ore. Syst. Min. Jameson.

Nomb phosphatee. Hainy, v. 8.491.

The yellow phosphates of lead of Wantoch-head mines, Scotland, are found coating Galana in the Bellan-grain vein, from 20 to 30 fathorns below the swifere, but gradually, disappear at greater depths. From this mine the specimen came, brought by G. Laing, Esq! They are found in other ports of Great Britain. The provest phosphates seem to be of the brightest gellow, and the engetate are generally very small, being mostly hexaedral columns and their modifications. The present is in very perfect hexaedral whenever, and its yellow varies in intensity, with

a greenish and brownish cast. The ongstals are soft, but the, easily straped with a hinge, I the powder (It is said to be gray by Hairy, let the colour of the map he what it will. I cornex fronds with The colour of the crystal. The crystals will easily derath carbonate of Lead. Frantine offilin. they and conchoidal." Integrant molecule an irregular Tetraccion Communica form a hypgramidal dodeca: - echon " Hairy . We find there at first by laposwe to The blowpipe, turn green; Then They afourme a pearly colour, & afterwards become tragularly febrows. The head being continued, These files unite in a some - what comentrating manner, forming various polygonal facts in an wegular Sot of orystallisation: see the left hand figure at the bottom. This substance is Sometimes Situated on an amorphous matrix of its own nature, or on quarte, ochraceous quarta, galana &c., as mentioned in another place.



Yellow Thosphate of Lead.

-84

Jab. 83. Cala nativa. Native Lime. Class 2. Carth.* Order 1. Homogeneous. Gen. 1. Lime. Spec. 1. lata nativa. Gen. Char. Lowdery or concrete, with a hat burning taste. Corrodes animal substances. Spec. grav. 2.3, Amo, v. 1.5. Greeifitates from a solution in water, by adding corrosive sublimate, in The form of a reddish powder. Sir. v.1. 15. Changes Symp of violets green. Spec. Char. Uncombined. Syn. Native hime. Riv. v. 1:74,75. Swe time. Bab. 7. Artificial . Cake viva. Mat. Med. Quick-line, or Cala viva, is well known, as procured from Shall or fine - stone by means of burning in fine hilms. In the act of burning it is deprived of an air or gas, che. mially tormed carbonic acid gas; loses part of the weight, and Take up valorie; or fatent heat of D: Black. It is then caustic with the properties as described in the generic character, changing the syrup of violets green. * Parths are incombustible, infusible for se, spec. grow. not exceeding 4.9. and white. Homerly towned fixed air, discovered by 8: Black. It is heavies than common air, forming a small or adventitions part of the atmospher; is reachly absorbed by cold water, giving it a brish taste. At an aid, it homes vegetable blues red.

Whis character it retains as long as the fatent heat or the effect of it Frato, which heat and principle of changing the symp of violets green will be look if exposed to a damp atmosphere. The supper is artificial hime just saposed to damp wir, yet capable of hanging Symp of violets green, L beginning to fall to pieces. Ja quan - loty is suddenly added, it will loose its characteristic property some by absorbing carbone and gas from the atmosphere or the water of which the fine had desprived it in the hiln, I when dried without real will be nearly what it was at first. The middle figure, late nativa, from Bath, has qualities resembling quick lime, and Changes symp of violets green, mearly as vivid as that produced by The artificial above; The lower figure is him taken out of a Swellow nodule of flint, to which before it was broken no aperture could be Jeen. The contents were caposed immediately to some fresh violity pelal, prefed so as to afford 2 or 3 drops of profile third, it desitty changed the green. It soon look that property , I is now a gritty chalk. Isternal Thoraster of the Bath Lime. Colour white Lustre o. Transparency o. Vacture earthy. Hardnep rubs easily to powder. It should seem that this passes out of rock, in a fermentative manner, oring or frothing. The up. 7:20 a little increstated with a stabulatical datestance. the inner of alittene fish North! Sir John Thil has seen it thrown out of the quantin on Math, I calls it native line and Gypsum Tymphacium of the antients, Jaying that The ophrashes has left a record of a thip * taking fine from the heating of the gupsum among some clother, on the accidental admission of wet; I that he does not call it gypum periself, but an earth only that the people about Tymphea , &c. talled gygrum. * Since the above written M. John Hailstone, Woodwardian professor of fam: informs me that the lala nation sent to I Woodward by D. Moneton has no pretennous to be a line.





Upper Fig: Artificial Lime,

Mid: Fig: Bath Lime,

Lowest Fig: Lime out of a hollow Thint;

Themt.

Jab. 84. Argilla Marga. Argistaceous, Marte.

Gen. 3. Argil. * Spec . 1 . Argillaceous marle. Div. 2. Semi - indurated.

Spec. Char. Argil x carbonate of Lime, in which the former fredominates.

Syn. Marga argellacea. Waller, v.1.72.

Mergel. Emmerling, 0.1.491.

La Marne. Brochant, v.1.569. Argile valcarifère. Rainy, v.4.455.

This is represented as showing the distinguishing character, or parts, of marke, which if minutely combined, might require a Chemital analysis to determine them; and may be inseful to young mineralogists. Calcareous marke consists of carbonate of hine from 66 to 80 per cent. Riv. v. 1.94. Marke property so called consists of equal parts of clay, & carbonate of lime: Argithecous marle contains about three parts of Clay, and one chalk. M. Andreas, in Kir. v.1. 192. The prevent specimen, was given by M. Gillington, G.L. S., was found about 190 feet deep, in digging a well for I : hedesdale, now C. Bodes Esq:, at Streatham, Swiney.

* lommon lay, which may be chestingun hed under most combinations by what is commonly called an earthy scent.

It is of a semi-indurated toughish texture, but readily falls to pieces in a damp atmosphere. The clayey parts are evidently mixed with carbonate of Lime, and some of the shells are little else atthough They retain the original figure so well that we may distinguish some of the species. These on breaking the maps, leave half their substance on the convex side of the matrix, & the other half in the mould.) The pearly Oyster Shells only seem to have assumed a black tringe. The other pearly shell, perhaps Area Nucleus, Linn Gmul. v. 1.3314. retains its original bustre, its gluten being less easy to decompose. (see M. Falchett's ingenious paper in Phil. Frans. for 1798.) There are other pearly chells in the mak, but not easy to be made out. The dayey tooking hart does not effervesce with vinegas, neither as the pearly shells. The chalky ones readily do. Marles depending on their proportions of Lime, clay (Clay much to understood as a michine There of argil, Silea, and Iron) or Sand are used as mameres, each sort being adapted to the nature of The Land they are applied to. One hind of Marke has lately been found to be a useful Stuiro, when properly prepared:



1-14

Marle, with the decomposing, Shells almost specifically distinct; forming, chally Carbonate of Lime.

379 Copping dondatament. 111.83. Gen. 4. Toppers Spec. 1 . Solling.

Jab. 85.

Gen. 4. Copper. Spec. 1. Native.

Dis. 2. Imilalive.

Syn. Cuprum natioum. Waller, v. 274. Linn. Syst. ed. 12. v. 3. 143.
Gediegen hupfer. Emmerling, v. 2. 206.
Cuivre natif. Deliste, v. 3. 305. Hair, v. 3. 518.
Native copper. Hirsan, v. 2. 128.

Not uncommon at the Island & other places in Comwall, in the crevius of quartrace rocks, or in sorbentine; and is occasionally found in N. Wales, &c. It auommodates thely in all directions to the Smallest openings, 2 amifying, or inosculating, as in the specimen Legioned, or forming network. It is generally so compressed as to have The impression of the stone on the surface, giving breadth to the extremities, like Johage, which is often helped by the Tendency of the metal to orgstalline. This it always partly does, but in so confused a way that it can only be understood by comparison with such specimens as have had some room to orystallike. This will be readily understood by the figure valled Arbonson Copper. The fresh fracture is very rachly, mostly brighter and higher in colour . Than the outside which is often Mained . It is however sometimes found so have that it changes but tittle of the fracture will hardly show a difference of colour of carefully high. Hardness 6-8, Kins. Steel cuts it meatly whene it is made into plates for engraving on. It is soluble is acids. It forms a compound metal with Tin and Line, called braft. It is readily drawn into wire, which is very tough and diviable. A were one tenth of an inch in diam " will sustain 299's pounds weight.



Native Dendritical Copper.

Jab. 86. Stannum oxygenizatum. Oxygenized Sin

Gen. 8. Tin. Spec. 2. Vative oxide. Div. 1. Crystallized.

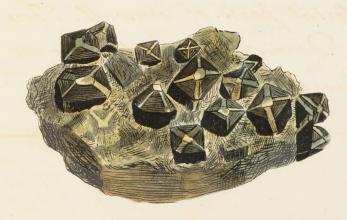
Gen. (har. Nearly as salite as Silver, malleable, dutile, and Sonorous in a small degree, flesible, but with a Cracking moise. Spec. grav. only 7.063 to 7.331. Smell unpleasant. Truses at 410° Trahrenh. Not toluble in neture and.

Spec. (bur. Sin united with oxygen. Syn. Common Jin Stone, Riv. b. 2. 197. Limstein. immerting, v. 2. 421. Clain oxyde. Hairy, v. 4. 13%. . Stannum crystallium. Linn. Syst. ed. 12, v. 3. 130.

In, although universally known in the metallicitate as obtained from the ore, would never in accognizable without experience in the orgotallined axide, from which it is chiefly prowed. This Crystal was once thought by the Cornich mines, to be distilled of metal. The tim mines of Cornwall are the most famous in the world and were very early known. The Ohanicians procured this metal from Thind. The bornish him ones are said to be the most fure, as they contain les Iron and wisenic than those of Bohemia, Jucony, &c. The Crystals are mostly confused; specimens koweser are sometimes found (and preserved to gratify The corrow) which are very distinct and heartiful. They Esemble bottle glass; are mostly of a Black hue, approaching a brownish horny histre; Sometimes brighter, and with a

flow spackling, varying to ned, gray, or whitish. The crystals are the public or octaedral modifications: The perfect cube has this believed never been found. The ortaldron, is perfect In the Honde- Gravilles collection Sowerly has one nearly To. They often prep against each other, forming ma. · cles, &c. This one is found varying, sometimes amor = - phous, in the quartrove, decayed granite, or grow an, hiller, and other roches: also in stream, and is then called Theam tim. It rewes also in pebbles, and Sandy partiles. A ware species, called wood tin, or tin hæmatites; also another called tooth tim, we found in different parts of Comwall. There is very tittle Tim in Devonstire, and none in any other wunty of Great Britain.





Dayd of Tin Crystallized

1-18



389 Joh 87

Plumbum Galana. Sulphure of Lead; Galana.

Jab. 87

Gen. 5. Lead. Ord. 1. Homogeneous.

Gen. 5. Lead. Spec. 7. Sulphate of Lead.

Div. 1. Crystallized.

Syn. Galina, Sulphure de plomb. De Born, v. 2. 354.

Bleiglanz. Emmerl. V. 2. 369.

Inspheret of Lead. 15ab. 166.

Lead mineralehid by sulphur, compact galana. Kirw. v. 2. 216. Plant sulphure. Hairy, v. 3. 436. 7. Plumbum galana. Linn. Syst. ed. 12. v. 3. 133.

This is the commonest tead one, is found in Borbyshine lumber: I porposhine &c. in Wales, Swotland I Cornwall. It sil. "dom owners they amorphous. The present specimen came from Derby: and is valuable having the primitive cuties english so distinct. They are somewhat brighter than manufactoridial, either outwardly or in the fracture, which rather more resembly manufactured lead frush cut. Some varieties are brighter than others; which is said to be owing to their containing more scheme. Some varieties have a diverging striated fracture. This one bolds Isad in the metallic state. Before the blow pipe on chancal in decrepitates, but metro easily with a sufficiency smell, part during mits, the Chancoal. If atternably heated and cooled, it will at lost vanish, and leave its Silver, if it contains any. Berg. 493.—
Spec. Grav. 7, 587. Brifon.



1-24

Sulphine of Lead, Galana, or common Lead Oce, in Lubes. Sulphate of Barites, &c.

383 Jinb. 88.

Upper Figure. 384 Sab. 88. Cala sulphurata; var. plumosa. Sulphate of Lime; var. plumase. Class 2. Earth. Ord. 1. Homogeneous. Gen. 1. Line. Spec. 5. Sulphate of Lime? Dio. 2. Imitative; var. plumose. Syn. Sulphate of Line forming snow white moustation, xc. Bab. 29. ccxvi, a, l. Chana sulptie niveforme (Avariety found at Montinastre.) Hairy, 2.279. The apper figure is a curious variety of sulphate of lime, or gypour, from Mattock. It should seem that sulphur of hon or pyretes, by exposure to damp, decomposes; the sulphur lom - bining with oxygen form sulphuric acid, which comes in contact with the Line in the rock, and so forming gypsum, over out in famiful forms; or, in other word, readily produces Jupsum more or les crystallised. It is continually forming in many parts of England. L: Allamont gave lowerly some no. -dules of pyrites, in which gypsum is formed, from a well Just dug in Cambridge. It is continually crystallising from The Salphor of pignites & oyster shells at Shotover Hill, near Oxford. The Lower figure is on a piece of Lime Stone forth a fatid oclour, called stribstone, the gypsum Imeading in a very peculiar manner on the surfaces in patches. This specimen came from the nigh: of Durham. Jew by the Rev: John Hamman.



Egypsum Plumosum, or Feathery Gypsum, or Uncalcined
Plaister of Paris.

Argentum capillaceum. 387 Capilary Silver. Jab. 89. Gen. Silver. Spec. 1. Native Silver! Div. 2. Smitative. Gen. Chur. The whitest of all known metals, very mast. eable, and sonorous; specific gravity before hammering, 10.474; after, 10.310. Dissolves in nitric acid Esadily, and may be precipitated from it by copper, mon, or xim. humains in frasian at 28° of Wedgewood, but requires a greater heat to four it. Spec. Char. Dur tile with but a small proportion of alloy. Syn. trgentum nationen. Walter, v. 2.328. Sinn. Syst. ed. 12.0. Native Silver. Kirwan, v. 2.108. Bab. 146. Gediegen silber. Emmerling, v. 2. 153. Argent natif. Hany, v. 3. 384. This Specimen came from Gwinear, about y miles from I! Michael's Mount Cornwall soon after the discovery of Navture dilver in the Herland copper mine in 1799. according to the Theo: Malachi Thithin's account; in Phil. Frans. for 1801, hage 169." The lode in which it occurs is one of those crops courses which intervent and derange the copper todes, and are consequently of a more recent formation. No over of Tilver were observable in this lode till at the depth of 110 fathoms from the surface, and at the further depth of

388 32 fathoms they disappeared. The richest map of Silver one was found at the depth of & fathoms above the Level at which it disappeared. about 108 tons of it are said to have taided. The Silver one shirtly speaking, is a mia. here of galana, native bismith, gray colalt ore, vit. Thous sheer one, and native deliver. This theirmen seems to be galana decomposing and protructing the silver; itely remaining of a cinereous appearance, foring the natural brilliancy. There are also some pyrites and bits of quarte. The other probuded is nearly pure, and has been (from its evoling appearance) compared by the people of Benzance to The sorapings of silver spoons. The silver for coin and manufacturing is alloyd with lop. for, which does not affect the whiteness, and is not early detected unless in too quat proportion, when it may sometime he tasted it may be made very thin as het silver, I grain this formed measuring more than 51 sq: in. It is often used toplate our copper or iron, I were so made derves for musical in. Thuments, &c. a wire I tenth of an inch in diam: will sup. port 270 tos weight. Silver being defilled in nitrie acid and precipitated with mercury, resemenbles a tree, Lis then called Arbor Drana . - I precipitated from the mitrie and by fine water, the precipitate dried and washed with a solution of hove ammoniae, has a dangerous fulminating property; I on the shightest touch, or frition, will explode most violently, exceeding gun powder. The nitrate of riber stains animal substances or deep black, I has been property. used to blacken hair; but it is extremely dangerous, owing to its corrosive



1-16

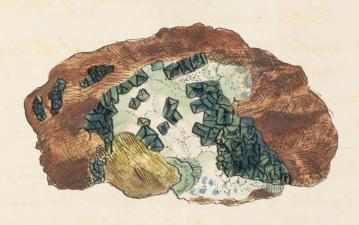
Native Silver in its Ore, Cornwall.

Class 3. Metals. Ord. 1. Homogeneous. Gen. 4. Copper. Spec. 9. Arseniate of Copper. Div. 1. Crystallized.

Var. The solid angles of the mutual base of the two pyra-

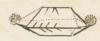
Spec. Char. Arsenic acid combined with copper. Syn. Phil. Trans. for 1801, p. 169.

This is not mentioned by bount Bournon. among the clu. this of grafs green crystals of asseniate of copper, we mostly find Some with the corner of the mutual base of the pyramids more or less rounded In this they form regular facts, making it a 12 - sided orgotal. The facts pap the common we base at right angles outling off the 4 corners. There the mutual base is an actaidral plane, at right angles with the 4 corners of the double Myramids. They are Somewhat uneven, and Show coilint signs of the want of a few molecules to fill up their interstices. The crystals in general seem to have been disturbed or interrup ted, I show marking on their surfaces. The left hand fig is in Sowerby possipion, Showing the sides of the mutual base somewhat rounding. The broken crystal in the middle, to show the blue within, was most conspicuously so, I is figured of the natural Size, being Larger than usual: The other two are shightly magnified. We have some met with one of of an inch long.









Green Asseniate of Copper, in Octaedrons, with the solid Angles of the mutual Bases of the Pyramids truncated.

3.4

106.01. 200 alway ; 5: 2. 1. 184. Cala carbonata, var. metastatica.

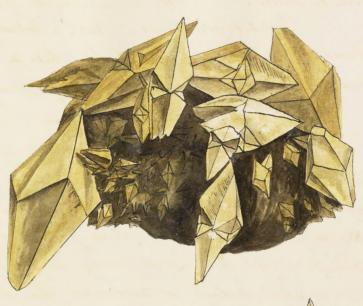
Tab.91.

Class 2. Earths. Order 1. Homogeneous Gen. 1. Lime. Spec. 2. Carbonate of Lime. Div. 1. Crystallized. Var. Metastatic.

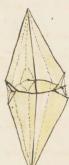
Syn. Dent de cochon. De Lisle, tab. 1. p. 530.

Chause carbonatee metastatique. D Hairy, v. 2. p. 184.

This form or variety of crystallization of earbonate of hime is perhaps one of the most common, in England it is called Dog's looth spar, and in France Dent de cochon or Swines tooth. It is of various sois and colours, &c. in Derbyshire, some show good examples of the primitive thomb, being clear & differing very little from the The Fieland orystal, which is rechoned The most pellucid, The left hand lower figure shows the word construction, The edges of the opposite pyramids meeting on the edges of the fimiliae thomb, when the obtive ends are opposite to the each after, (The metastate is formed by an addition of lamina, formed of shomboidal molecules whom the faces of the primitive should, lack plate decreasing in width twice its thinking, this is explained in anotherplan The more acute angles forming 3 principal ones & the obtin 3 lep district: Thus each pyramid has & sides, the aute & obtion meeting in alternate order at the sommon base. The right hand figure refresents 2 pyramids of the same, transversely cit through the middle, Showing a plane of 12 sides, 2 turned on the axis till the mech each other in an opposite direction, called maching. They often seem to be 2 crystals papping into each other. This is formed on a gangue or hump of manganese, or black wad as miners call it, which tinges the Crystals disty.







A Group of Calcarious Crystals, or Bointed Dog'stooth . Gear, on a Gange of Manganese; showing the Macles, &cc.

Frenum suboxygenizatum. Magnetic Fron Ore!

Class 3. Metals. Preder 1. Homogeneous. Gen. 6. Fron. Spec. 2. Magnetic.

Div. 1. Crystallined.

Spec. Char. From in combination with but a small portion of oxygen.*

Syn. Iron in a calcined state mineralized by pure air.

Kisw. 2.15%.

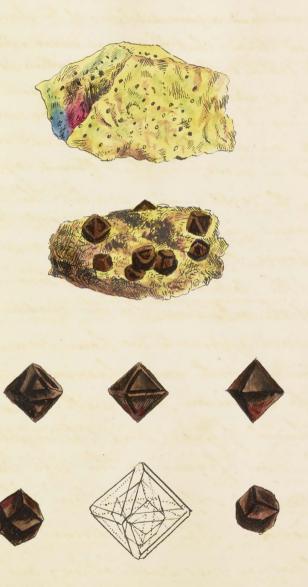
Magnetischer Eisenstein. Emmerl. 2.278.

For oxydule. Hairy 4. p. 10

O Herrum tepslare. Linn. ed. 12. t. 3. p. 136.

Lowerly discovered This curious crystallination in a pyritacesous copper one, brought from near Tavistock by M. John Taylor Jun. The trystals are dispersed through the our one in toterable abundance; but being small, do not readily distinguish themsolves to the imagisted eye: with a lens, however they are very datisfactority seen, with the variety of modifications here fig. -wed, I sometimes, by breaking them, we find them avious. - by casing each other 2 or 3 times. They are most readily attracted by the magnet, and will support a part of the gangue of pupites that may chance to be attached to Them, of 8 or 10 times their own buth. The gangue is said to be with in copper, and is commonly of a bright and. 15 to 24 per cent. Kirw. vol. 2. 158.

pale golden colour, dometimes with a greenish here, and often videscent. Sowerby does not know that this crystallisis variety of magnetic oron one has been observerd in G: Britain before. I Badham gave him a fine octacion of the Swedish sort, which is about i an with in diam: but this is not more strongly attached by the maget. It is coaled with mise, and, within isofa moneor tep deep- brown red, Sometimes times they approach to Steel gray I black, partly shiring, & metallie. Fraction uneven, somewhat earthy. The orgstate are arranged in convenient order, to see the addition that afoist in modsfying the different orgotallications wing The upper figure on the right hand exhibit the regular ortai. show the fair of which by the addition of the famina of Inperposition, or superior coating, form long six side facts, which are those of the doderaction with 8 triangular faces parallel to those of the octaidron, see the middle figure. Thise we the nearest approach we have seen to the octain. thon in our specimens; with more farmine, it heeps the Same form which is shown, but with smaller triangular facts in the left hand frience and the right hand but figure. In the lower figure on the left hand the Samina have advanced sofar as to form the complete Thomboidal dodecaedron. The geometrical outline shows This manner of casing over each other; but we much correct the dodecaedron in the centre for the octacion as whon further examination since the engraving.



1-54

Magnetic Fron, Ore in Octaledrons, &c. in Copper Dyrites.

Sub. 93. Gin. 4. Copper. Ams. on Sice Grav. 3.5, 10 3.991.

Cuprum carbonatum, var. byfsoides. Byssus-like Carbonate of Copper.

Class 3. Metals. Ord. 1. Homogeneous.

Gen. 4. Copper. Spec. 3. Carbonate of Copper.

Div. 2. Imitative. Var. 8. Byfons— like.

Spec. Char. Copper combined with carbonic acid. Syn. Green Malachite. Rashleigh, fasc. 1. tab. 7. f. 6. Luivre Carbonatie vert Joyeuse. Hairy 8. 573. Malichit. immerl. 6.2. p. 253.

Malachete copper ore, Similar to this, has been found plentiful at Landidno, in Denby. it appears more felow a vegetable production, than mineral, velocity. Upp: surface very tender & bruids on the slightest touch, hurning white. The sides become more or lep white when eaposed to the air, but Just broken a sating green, of fine thready radio, often closely comparted in stratifical order coat over coat, the an onion. Jound from a light to a dark green; Sometimes the swefare is triged with red paying into orimion. Its form is generally in protuberating himobs or mam. -mille. Malachites Though well known in many parts of England have been generally extremed as foreign productions: Di Babington Jays the harder dort has been found at Helstone, I the Landsend I. Wales, & yorkshire, we have it from Wheat Writy, lorn. The Soft. : It dot is not umoumon among copper ones, Di Bridout, got one at Todington mine Somerotshine. They are said to con-- Tain from 66 to 15 per cent. coffer, 19.4 carbonic acid, and 5.6 water, and sometimes a little arsonic. Hardness, 5-7. Kim. Spec. Grav. 3.5 to 3.994.



Green Byfins-like or Soft Hamatitic Carbonote of Copper, &c.

Jab. 94. Cala carbonata primitiva, var. Primitive Carbonate of Lime, van. Class 2. Earth. Ord. 1. Homogeneous. Gen. 1 Lime. Spec. 2. Carbonate of Sime. Var. Crystal primitive, with secondary faces parallel to both Those of the equiaxed and metastatic. This amous crystal is sometimes found at lastle - Town in Derby. Thine . Its ganque is generally a bituminous limestone. It is a little milling on the outside, I roughish; those edges excepted which are rounded; see left hand fig. The right hand fig. has broad faces beaching to the equiasced orystal, which Jaux are as it were polithed, I in the middle is a long itudinal him showing the edge of the nulleur, consequently the famina of Infugnosition: The the upper part of the right hand fig. Thene are also rough four leading towards the mitastatic crystal; See the lower part of the right-hand fig. The little black spots one chops of mineral pitch, which mostly arcompany These varieties. They have generally been termed fromtive crystals, without further consideration. In an averanged collection They may be placed near to The primition.







1-20

Carbonate of Lime in Rombs, the edges of which show the Trucks heading to the inverse, with other variations.

Cala Fluor primitiva.

Primitive orystallized Munte of Line; or Thurk

Class 2. Forth. Ord. 1. Homogeneous. Gen. 1. Lime. Spec 3. Fluate of Lime.

Div. 1. Crystallized.

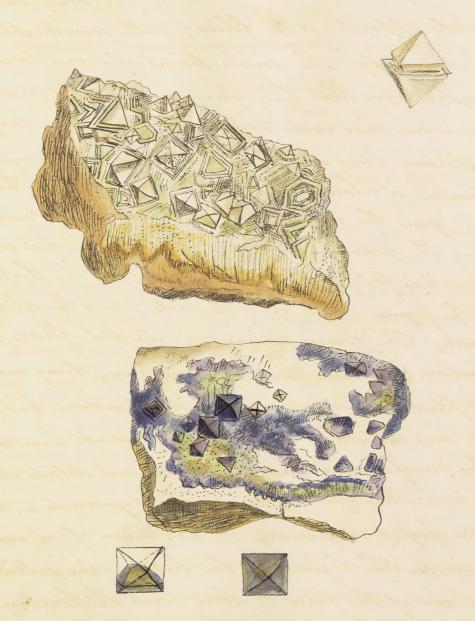
Syn. Chause fluatie primitive. De Liste, t. 2. p. 15.

Hairy, v. 2.249 t. 31. f. 74. Rashleigh v.1. t. 24. f. 1.

Octaidsal fluor is save, as observed in another flowe. The supper figure is from a specimen found at Bur Moton, in Devenshire. Sowerly has never seen any of an of aque white but from that place. I which is an addition to the aircointy of the specimen, the crystals how are alternatibly of ague white and transparent green, being as it were cased whom one another, 5, 6, or more times. The transfarent haid about hind grain the usual vivid glow when laid whom a hot paker, soon crackling a flying away. The white fast does neither, and will remain as a defence to the neat transparent part, until a stronger heat bursts it. The matrix is commonly homestone

* Perhaps it is merely a carbonate of hime only.

In apparently broad Strata, next to a dandy one on the side opposite to the fluor; with considerable hollows, Seemingly the impressions of some large con. fused onystallisation that had been in the neat strata. This homestone, has sometimes apparently very furge green ortaidral fluor on it, covered with quark orgotated Some vaneties of octaechal pyrites. The megular fractime of the former gives the matria an odd appearance, Somewhat Tesembling the ground plan of a fortification, I not unlike what is called fortification agate found on the Scottish wast. The figure at the top of the plate shows the octaedron I its cases. The fower figure is ortacidral fluor, from Aberdeenstwie Jameson does not observe any thing more Then that floor how been found in Aberdeenshire had he observed any octacions he would not doubt have mention. it) They are of a dark purple, but do not detach so freely as the above: They are lighter purple or greenish on the in: : side I are peopled confuseally in a stratum of calcaneous Spar & canh. The figures at the bottom are octaechons lying on one of the faces to show that the fracture which is parallel to the face quies a hexangular form, as capul. ed at the left hand figure, and will arount for the hexarchal remains of the enjotal in the figure. The more Triangular fractures one nearter the primitive faces.



1-26

Fluate of Lime, our stallized in Octavors, coaled with opaque White and Green alternating.

Jelly filamentous Sulphate of From.

Class 3. Metala. Ord.1. Homogeneous. Gen: 7. Iron: Spec. 6. Sulphate of Fron. Dio. 2. Smitaline. Vor. White Silky.

In another place the beginning of this white silling substance is shown by means of common moist wir decomposing the pyrites, which is held in the black clay in such abundance in this specimen, as to separate & divide the so confuselly, That it is only recognisable by the little Thin flather, which still mie out small therese partieles if in a damp place. The men orystallised parts in this openmen are also forming with white woodly fibres. Whitty in Morholine, has long been famous for its alum works, Sowerley has speumens of alum one from M. Baher's Boulby works. it is a more compact one Than that from Glasgow. a specimen came from Showbrow Jorhi, among which a baked frem had some of the sithyfifinents remaining. Ahum has not been discovered native in England. This said to be found abroad in octaedral crystati which is the form of the artificial ones. Towerby has a fine opiciones from M. Bahus alum works; also some heartiful little crystals formed by agitation in a wine glap, showing the leper actachous within the larger, and Some unions modification. The crystallised specimen from Scotland has a prism.



Sulphate of Fron, or Viction of Iron, Amianthiform, &c.

Cupium anseniatum Anseniate of Copper.

Class 3. Metals. Ond.1. Homogeneous. Gen.4. Copper. Spec. 9 Annuate of Copper. Div.1. Crystallized. Spec. Chav. Arsenic acid combined with copper.

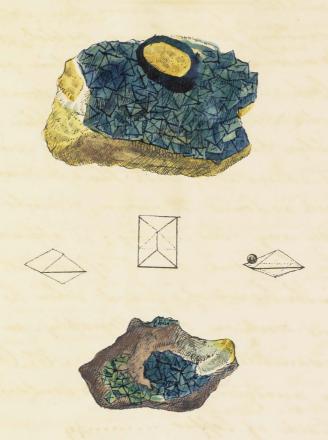
Shilos. Straws. for 1801, p. 169.

Syn.

Chenevic a' Count Bournon give the best amount of the ar. Terriates of copper. They are found at thul Gorland mine formwall. The complest, variety, according to the count, is the obtase octaedron, which has, in each of its pyramids, two oppo-The planes more milined than the other two; which gives a parellelogrammie form to their common base. The two planes which are less milined meet at the apex in an an--gh of 115, and at the base in one of 65. The faces are sometimes Smooth, mostly bright, and occasionally show signs of the angur of The Tetracolon, or have this parallel to their edges. The 4 plans terminate in one point; but more commonly the apex is formed into a ridge , the octaidson being lengthened parabet to the letter milined planes. The base is near a square. The first figure Seem to be race; Those with the ridge are more common, par. hickarly such as are further lengthened, paping from the right hand prime to the lift. (The lound only mentioner two varieties) The ganque is an achraceous quarte with some copper, & often approaches which is called fith copper.

A STATE OF THE STA

The right hand figure has a little green globale of a waxy appearance. Such and Sometimes abundantly scattered over over the Octacional orgotals, I appear to be carbonate of copper, or mulathete. It is either of a beautiful deepish arune blue down a queenwh cast, anathy Essembling June Thoman withiol, or artificial sulphate of copper somewhat opaque, or of a fine queen; resemtiling an emerald. Tuch are most transparent & Sometimes vary heing highter coloured These are frequently the withing as the fracture reachly shows. We shall now consider the Smedent openinens chemically, with the afortance of M? Thenewa, who as well as bount Bournon, remarks the rainty of this substance in any other Country; it appears that Hairy has only seen the hexaidral vanity of arseniate of loffer from Cormoall, in the hands of a friend when he was about his very ingeneous work on orgstallography. in another pair some of the varieties are described. Mr. Chenever gives The following analysis, found to contain Caide of Copper49 Ansenie auch 14 Water 35



Blue and Guen Asseniate of Copper, crystallised in obtuse Octaedrons.

9106.98

Ferrum. argillaceum. Argillaceous Oxide of Fron.

Jab. 98.

Gen. 1. Fron. Spec. 1. Argilluceous.

Oiv.1. Imitative.

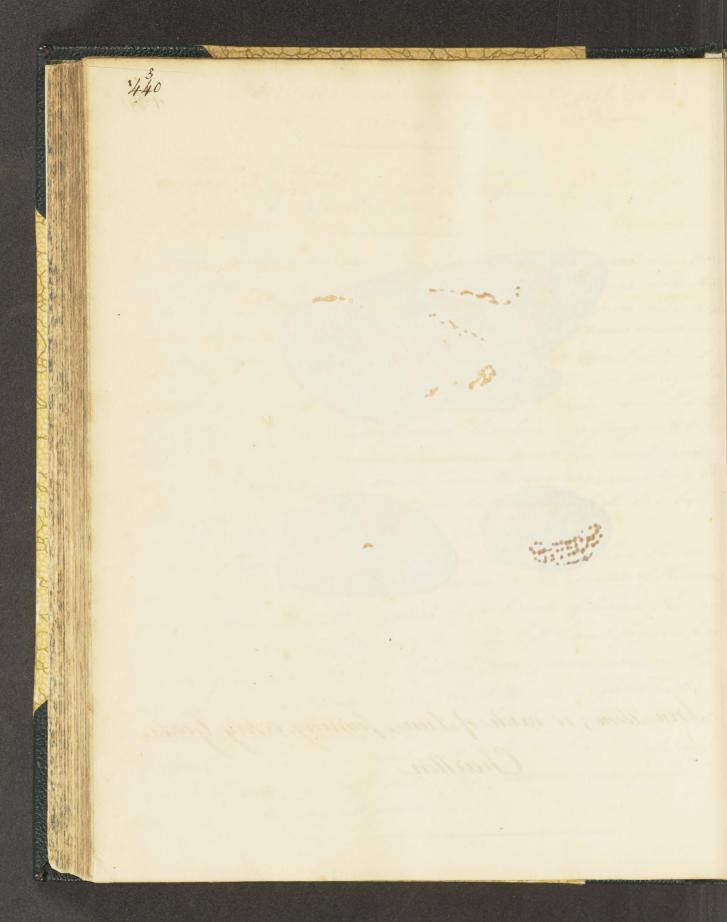
These seem common in marly and gravelly land, and are about dant at Shotover hill I its neighbourhood, where they are situated so as to afsist in forming the fine yellow other of so great value as a bigment. They vary atnemely no their Inape, Sometimes branching who a stage horn, or a branch of a three, & have been taken for min petrified. They are often coated concentrically, vinitating as it were, the Medulla, Liber, lortex and luticle. The may seem that the mostore paping through Toosish mad has been unfruegnated with The oxide of iron, and periodically drying, leaves the mark and caide of won concentrated; which forms the coating, awarding to The Pooseres of the earth. They sometimes concentrate to a ball, but at other times have only 1012 coatings. The upper figure is from Chartton in Rent, and had the remains of a shell of the Turbo hind in it. The inside of the seren is covered with minute crystals of carbonate of hime: Thou are other imprepious of Shells about it. The left hand figure has the form of a pebble with a lightish feveraginous other on the milde, and a dark court. The right hand figure haid loose pieces of other in it, of different colours, pinkish, &c., and They dometimes have wet mark and water in them. Such we called Enhydros by Sir J. Thill. The Specimen came from Monshold Heath near Norwin.





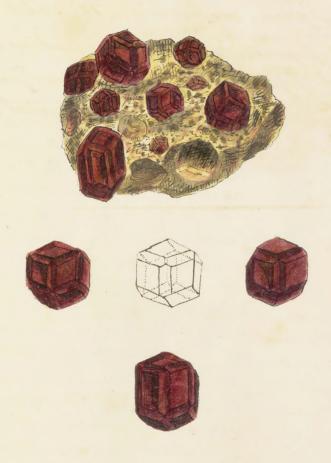


Tron stone, or oxide of Iron, forming ochry Glods. Chartton



Jab. 99.

Garnets in a higher granate ganque with the edges more disply truncated on the 6 opposite edges, see the right hand and middle figure, making an 18-sided cry. stal. The left hand figure shows the truncation equalby deep of a 36-sided figure. The lower figure forms a finish by 6 sides being chongated. These varieties are more or left district in the ganque above.



1-44

Garnets with 18 and 24 Faces, &c.

Tak mi

Class 3. Metals. Order 1. Homogeneous. Gen. 7. Fron. Spec. 5. Sulphuret of Fron. Div. 1. Crystallized:

Syn. Martial Byrites. Riv. v. 2.76.

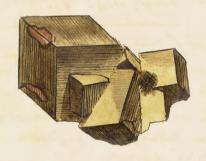
Byrites Martiales. Marcafsites. De Lisle, v. 3. 208.

Schwefel kies. Emmerl. v. 2. 289.

Her suspfare. Hairy, v. 4. 65.

The wiper figure is from Cornwall. This substance is very universal, and not rarely ours crystallized. Air perhaps as often found in the cubic or primitive form as any thing we know of, aspecially among the schistore Sweter in Wales, Scottand Com. - wall, and Freland, on what De Babington denominates Calp, vulgarly calls Trish Dramonds. This sort was formerly used for making Buttons, and was in fashion as Jewellery for Ladies ornaments about half a century ago being out and polished by the Papidaries, often to the destruction of the nat. and crystal. It is often found amongst coals, &c. It forms many varities of crystallications. The upper figure shows a group of trystate . The larger one appears somewhat faminated in the Structure, and is nearly covered as it were with a thin case. They are often quite smooth, but are more frequently found with straight lines or strike on the faces, alternating with the faces near to each other, but agreeing with the opposite sides or faces. The cubes are often larger Than these figured. Sender the blow pipe the odour of sulphur to very sensible, and a magnetical variole of From is produced. It scintillates with steel. The lower figure from hedroth, in Cornwall, with hittle Ewber, filled the clubs, and Somewhat varying in colour, perhaps Contains a little more copper. M. Diewan Jays a small portion of copper is always present in printer. The appear pack being paler is a sort of inclination of its holding most From . Spec Grav. 4,1006-4,7491.







Sulphuret of Fron, or Fron Byrites, in Cubes.

Jab. 101.

Upper and Middle Figure.

Soda municità.

Muniate of Soda, or Common Salt.

(lass 1. Inflammables. Ord. 2. Mised.

Gen. 4. Soda.

Spec. 2. Muniate of Soda.

Gen. Charl. Soda in combination.

Spec. Charl. Soda combined with muniatic acid.

Syn. Common Salt. Shiw. v. 2. 31.

Common salt, sea salt. Bab. 14.

Stein Jath. Emmert. N. 2.19.

Soude muriatee. Hairy, v. 2. 356.

Muria montana. Linn. Syst. ed. 12 N. 3.98.

Sound in abundance at Northwich in Cheshire, where it constitutes very solid strata, more or less mixed with common clay, giving it a drity how or with yellowish or ned cake of him. Its large square crystals are often so transparent and clean as to appear union transmited. The miners beaue fillows of it to support the troof; tooming very bullicent when lights one displayed to show it too middle figure shows the frusture to be cubic, and also some clear pieces bying among the coloured hind. Salt in sufficient quantity foresomes aminal substances from furthefather, but too little is said to from the from the father, but too little is said to from the Show. I for further the strines of bo. Hardnep 4,5,01.

Souther 2013, glafey. Transparency 2, 3, 014, Hardnep 4,5,01.

Spec. grav. 2, 143. Briston. Soluble in little lep then 3 trines its weight of water, at the temporature of 60. This. Prefraction

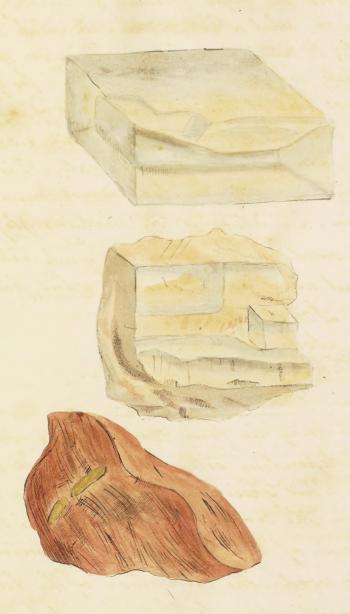
Imple . Salt in the ortificial way of preparing it, if crystallised

bastily for sive, has the centres of the cubes concave, or defreshed step by the from the edges, forming a survive signine. This is not uncommon in what is called rock salt, which is often preferred to bashed salt; so called from being sold in fine grain, and prefer in comial blashets. Common salt is also used for glacing common carthen ware. 100 parts of this salt contain 35 of soda, and nearly 40 of miniatic acid, the rest being water. Him. 2.33. Soda is an importaint best procured from common salt. It is otherwise from marine plants. Soda is not found nation in spread from marine plants. Soda is not found nation in spread Britain. It is sweefel in making glass, I have lattly been much used in washing too much rots the timen, and even to act as Flerende's possoned shirt, particularly to Sufants.

Soda fibrova. Thibrows Muriate of Soda. Dro. 2. Similative

This wow, depending either on common clay, or on oxide of hon. This specimen has a piece or two of common clay in the centre. Its fibrous part is roloured by a red axide of from. This sort of Shis sort of Specimen has been compared to wood, the curvature of the fibres and the fracture corresponding to that fanciful tilea. Some have thought that the red hind here figured re- Sembled musualar fibres.

4\$1



Native Salt, Rock Salt, or Muriate of Soda.

3-

453 Soi diel Legella legionta.

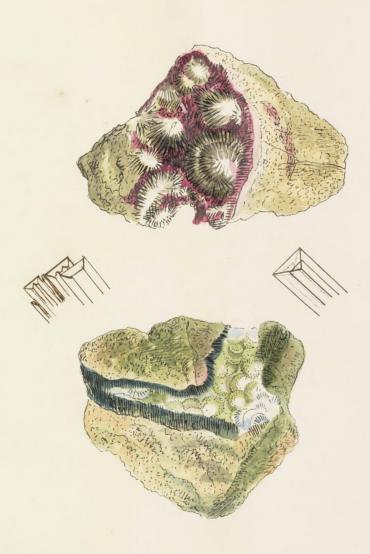
Tab 102:

Trailla hydrata.

Hydrate of Argill, or Hydrargillite.

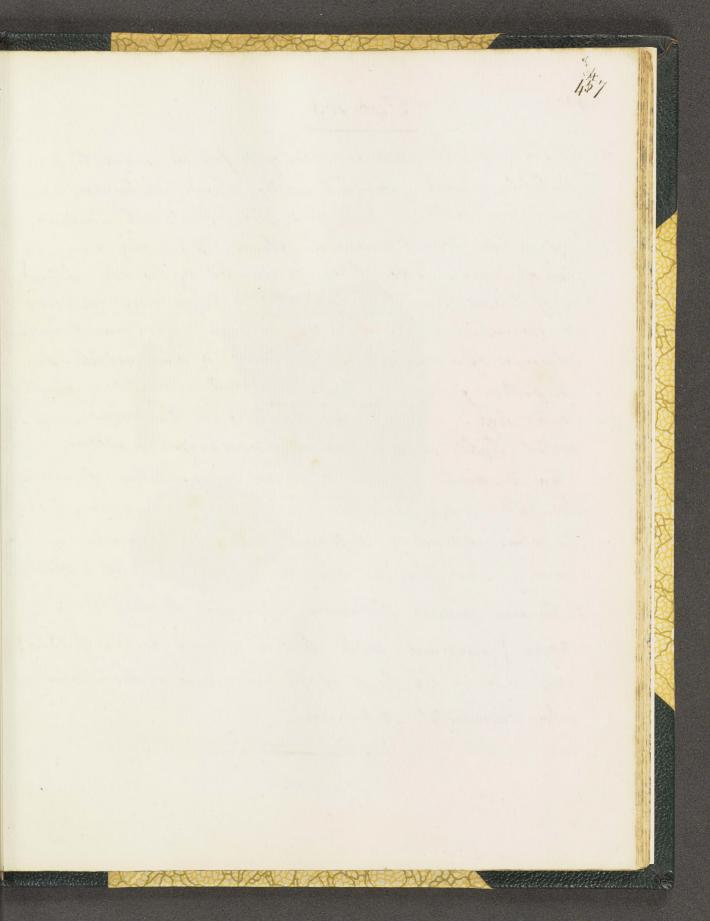
Class 2 Earths. Ord. 1. Homogeneous. Gen. 1. Argill. Spec. 2. Shydrate.

The suffer figure is from Cornwall. This is in Tooser gadie Than Those from Barnstaple, but the Crystal the Same, but shows more of the primitive faces (vis) the flat Mides of the cohemn, as that shows only one primitive face at the apex. The crystals were too I mall to be measured. We Tetain M: Days name of Hydrar: altho' M: Gregor believes There is an aid contained in it, but knows not what dort or whether equital to the annieral. It is formed in the hollow, of the rock, with Smark coloured with red oxide of Iron more or left Thehing in man mille about them, furthalis mined to "Cx -ide of Coffer. On fint of the gangue There appears Bride of Mranite. See tab. 131. winder a little Oride of Lead, Line, & Silia, & a metallic substance defering from Bramium. Some have a cotton Measure. Some pearly. The Matrix of some have whitish Quarts mingles with Min very soft, such as the comish Apatite is generally found in.



Hydrargillike from Conwall.

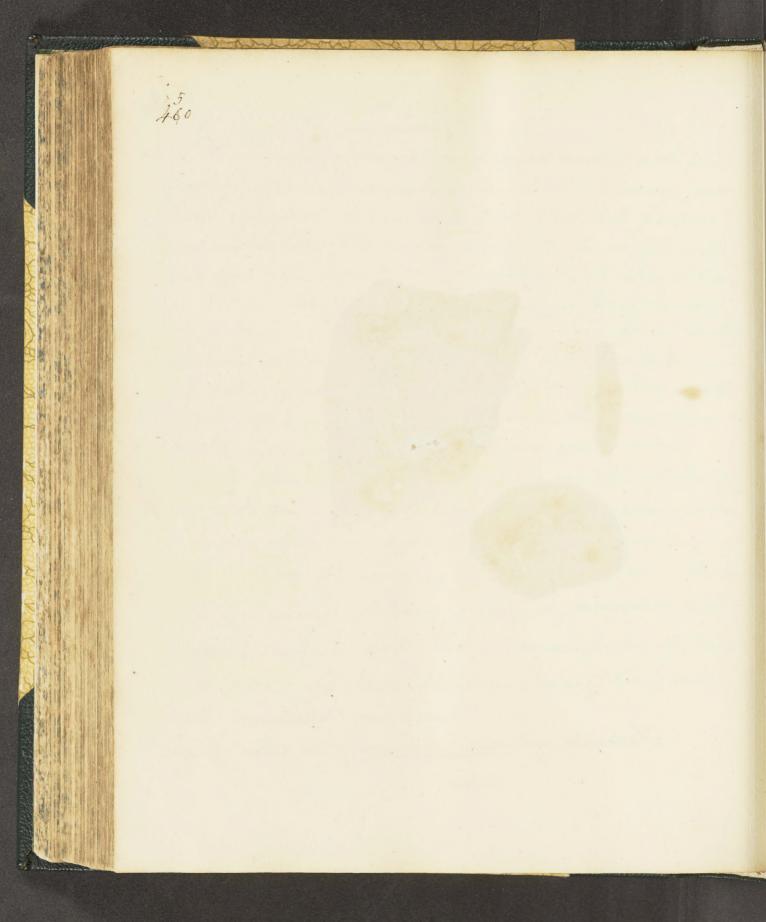
4\$6



of the indurated bottomens, one of the fish we met with was methoded in coarse, somewhat earthy, elastic Bothimen, and much represented in form of a gun Shirt, with fractures not withe those of common flists. It was very frune, of a dark ohio green , I was closely surrounded by the other bitumien as if it had been the fragment of a larger friend freeding in formation the earthy sort. we have sime found another Speumen of a similar nature with a black outside - see-The bottom figure and also a small Salactite or length. ened drop. The smaller fractures in these show thans mitted lights or illimitions of a warm yellow colour. Thus it should appear that an aummitation of the get -low hight, mixed with the dach make its him green , probably The colours depend on difficunt degrees of organizement of Iron. These figures may be a little too gay. Aurding to the buch chemish, Bitumen is formed principally of Thy-- drogen { combined with but a small portion of Calor} with more or less Paide of Parbon, oxide of Fron, and other midental substances.



Indurated soft elastic Bitumen, of an Olive Green Colour.



Jab. 104.

Hydrogen Bitumen.

Elastic Bitumen or Hopil Caout-chow.

Class 1 . Combustibles . Order 1. Homogeneous.

Gen. 1. Hydrogen . Spec. 1. Bitumen.

* Unknown in its fune state, unless as the softest & punch

Bitumen ?

Gen. Char. Inflammable, easily converted into gas by calor. From water by combustion with oxygen

Syn. Elastie Beturnen. Hatchett in Line Frans. v.

Spec. Chav. Nearly home, fotid not easily volatile.

Bitume élastique. Flany, v. 3. 313.

Elastie Bitumen. Schmeißer, v. 1.290.

Mineral Cahoutchon. Hirw. 0. 2. 48.

Elastis thes ordpech. Harston, 42.

Cahoutchou fossile. Lametherie, v. 2. 540.

The clastic Between were first notwed at lastleton, in Derbyshin in 1786 . Perhaps Their general resemblance

to the Caout-chon, or Indian rubber, discovered & about half a century ago, might in a queat measure be the cause of their being noticed. It is unions they have never heen discovered elsewhere, athough letrolum, raphta, and analogous substances, as Mattha, Mineral Far. Pitch, and As-Mathim, which are marly whated to the above, are found In many parts of the world. These always differ from the augitable Substances of the same nature (vis) common Tar and Pritch, My their peculiar orlow, which somewhat resembles ail of brick, a hind of hurnt oil. We cannot at present amount for the elasheity, otherwise than in the words of M: Hatchett: " From what I have already related, Input that the clastic property is occasioned by the interpo. Thon of very mintele portions of air, or some other electric fluid between the parts of the Bitumen, and that this takes Man by means of some unknown cause at the time of forma-Thin; for, when these Bottumens are metted, the clastic fluid is liberated, and the maps loves that fine spongy taking which I suspect to have been The cause of the etastic property" It is found ording out of rocks. The present specimen to attached to common Limestone; mostly Shinkstein: su 1. 81 Brit . Min . It is nearly the softent of the Master Sort: Tome fants of it are almost me an deaginous state, and Shit to the fingers, nearly the colour of common India rubber but will not thetch out time the, although it springs to its form after comprepion.



Soft Elastic Bitumen, approaching the appearance of India Publish.

465 A STATE OF THE STA

Jab. 105.

lala carbonata; vav. doderaëdra!

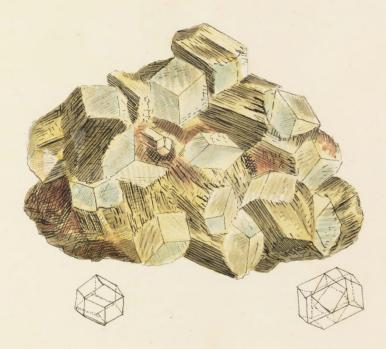
Dodevaldral crystallised Carbonate of Line

Class 2. Earths. Order 1. Homogeneous. Gen. 1. Lines. Spee 5 Carbonate of Line.

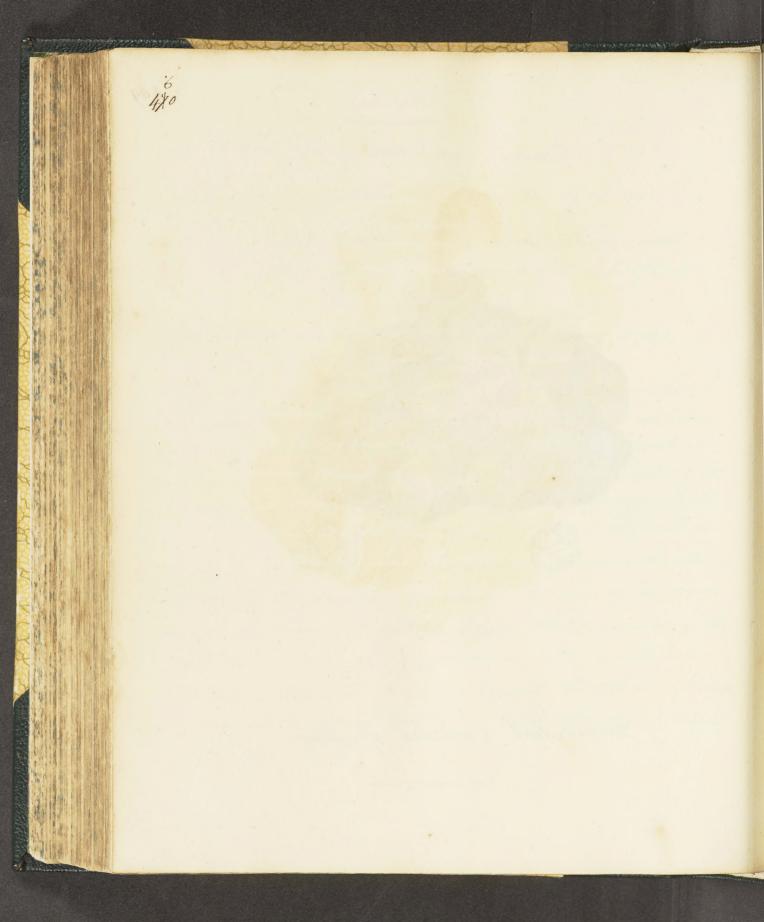
Div. s. Prystallised.

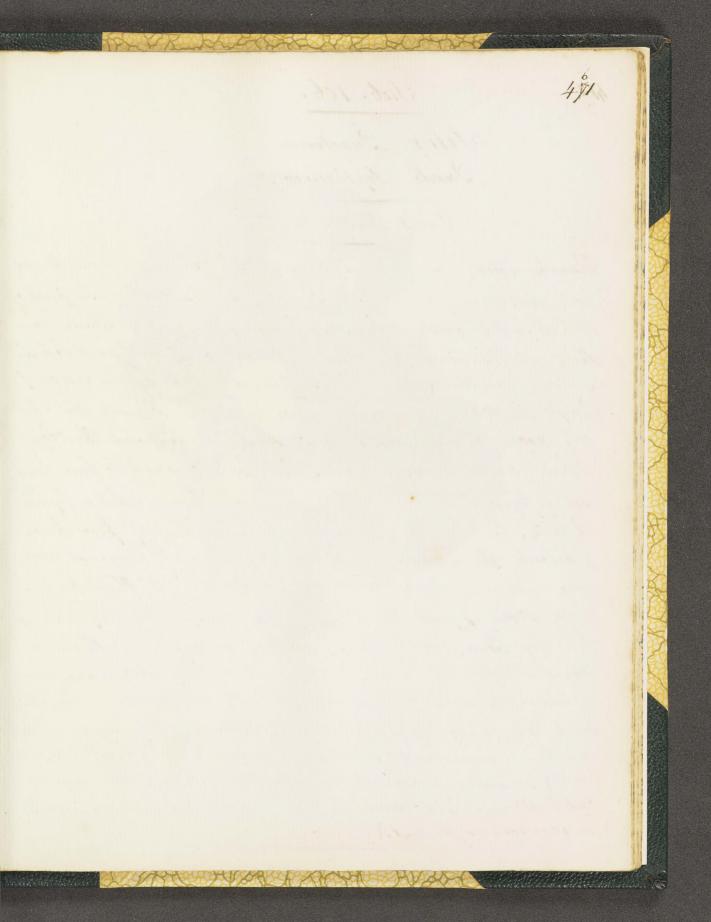
Syn. Chaux carbonatic bisunitaire 1. Hairy, 2.142.

This is a scarce thrind of larbonate of hime, and but for the medifications might be taken for a Garnet as being a rhomboidal dodicaction - The fractime of larbonate of he time is very apparent in it; as well as the shapes of the minitive observer, which will be found to agree with the figure of the partime: and are placed in such a manner as to form. The dodicacteral fraismo. The column is formed of faminas placed on the face of the whomb decreasing from the lateral edges. Its terminaline at the such in the form of the equiace. — see the middle fraismos the whole is a sort of minere ingulat; the whom formed to whole is a sort of minere ingulat; the whom formed to whole is a sort of minere ingulat; the whom formed to whom the North.



Dodecaidral Carbonate of Line.





Tab. 106.

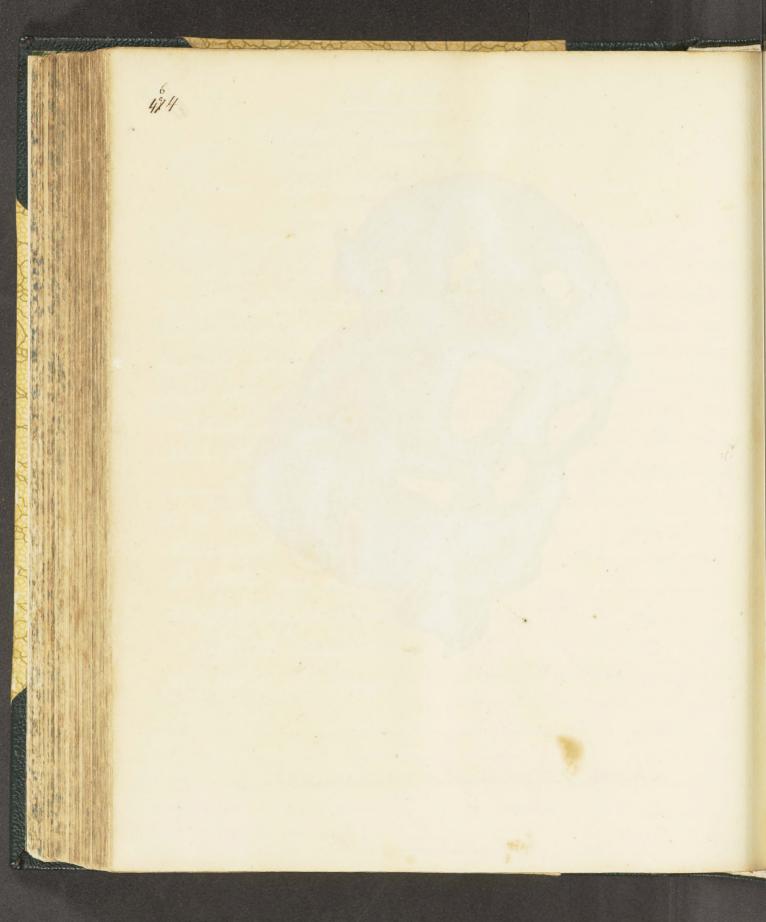
Siles Quartzum!.
Quartz Septanium.

Div. 2. Imitative

I mark affear in a great many varieties. This from its dull took has been taken for Lead. The hardness & sharpness of The deheality acute edges, soon betray it, I the fractures show the crystallization. It seems natural to most Imarts tohome been in Solution. here it has formed Itself in the cracks of Hay for whatever might have held the Quarts in white on, moght, at the same time have decomposed the day. which however, much have been dry enough to have track -est & formed sharp I neatly distinct figures, shown by the Smarte, the Clay would have been baked if fire had desidaed the Snark: but the day is in its original state. This openine came from lumbertand. M. Oliver had a now about I foot in length from which the clay had appountly been washed out, chiefly on one side. This is re-· markable for the incurved Shuston of the Septa. Hay from contraction in cold or frost, giving out much of its water in the fifteen which latter being enjourgnated with Quarte which may be crystall tied from a datinated solution in any medium.) the clay may then be washed away & Common Clay is mostly a mieture, of Siles and June argilla, and is often so called when the Quarte sontained in it amounts to 60 or even go per cent.



Quartz in form of a Septarium!



4/5

Jab. 10%.

Colx combonata; var. inversa.

Inverse Crystallised Carbonate of Line.

Carbonate of Line has been remarked at fortland Island for its fine Topasine colour. These instals are not unionmon in other places. but often friest in fifewer of Portland stone. The Statagmiles from Bath, yorks . Ve Show the same substance · generally lep mapy, & the ergstalled alin more or lep in spicula which often auror with this in form: This specimen terminates In aute shombs Somewhat rounded, forming a pryvimil whom the obtive angle of the nucleus: See the left hand geometrical figure. These often have Some ingstals formed Ander the same commentances on the sides; & observe that These Smaller ones are probably formed at a time when The others are marly perfeched, as the engelatlisation is Somewhat andependent; get they were enabled to Shik So into the larger ones, as to be of equal solitity with The rest of The majs.



Sugar-candid, the Carbonate of Line, with a preculiar Crystallization!

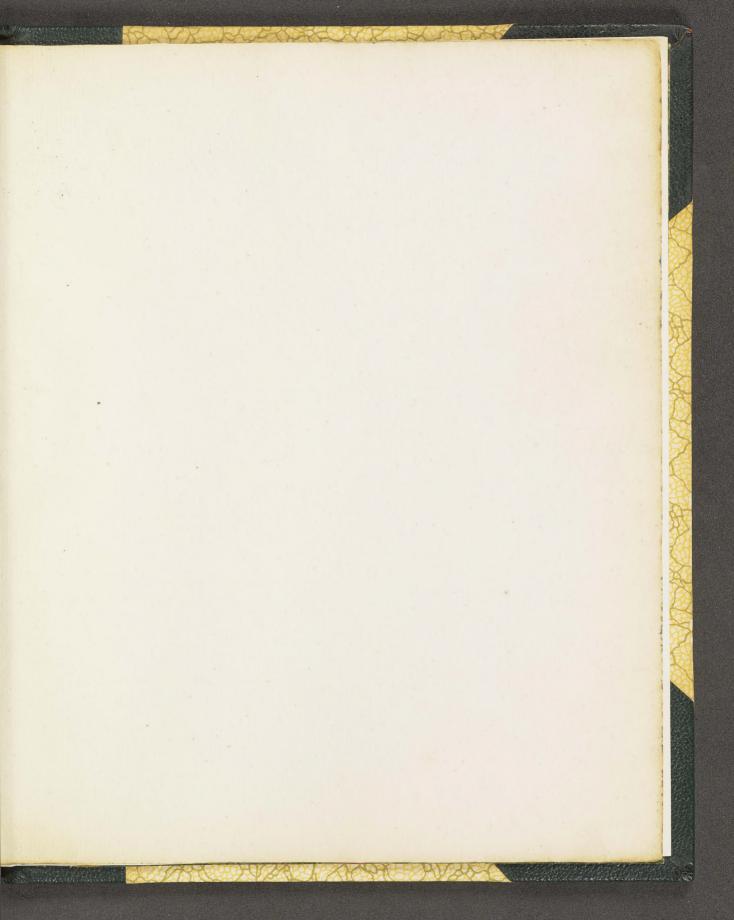
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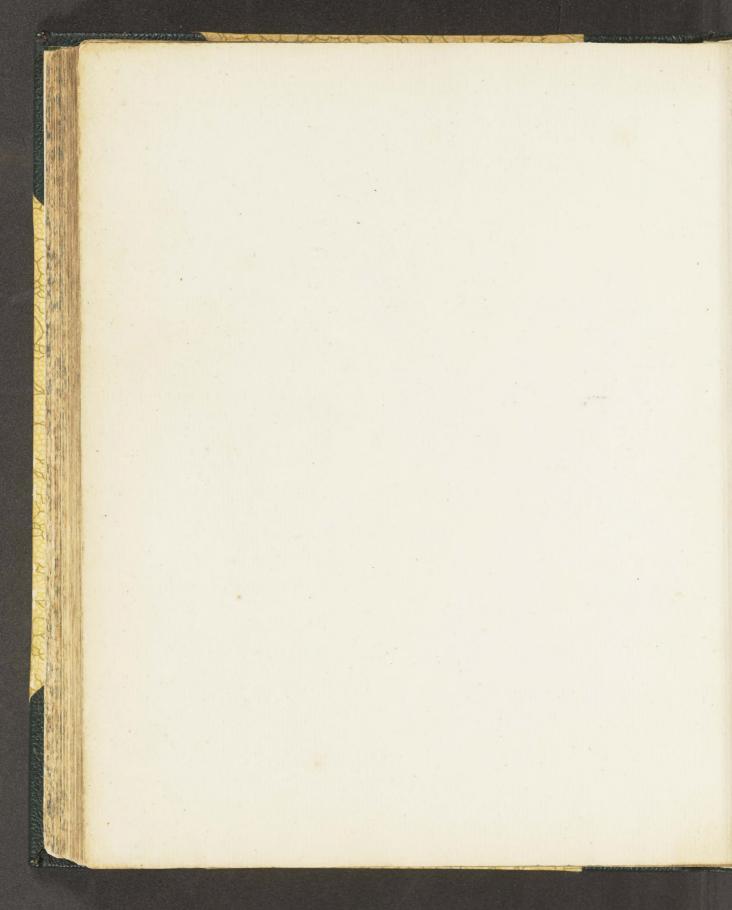
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This two-volume set was purchased by me in February, 1973 from a Midwest bookdealer. It was bound by myself in 1973. Pencilled numbers on some plates indicate correspondences with the volume and plate of the original printed edition. The present work is all hand lettered, drawn, and watercolor painted by a certain Martha Proby.

John sukanka

